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ENTRIES 1–473

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Vol. VI | OCTOBER, 1920 | No. 1

ENTRIES 1-473

AGRONOMY

C. V. PIPER, *Editor*
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1. ÅKERMAN, Å. **Något om resultaten av de senare årens lokala sortförsök.** [Concerning the results of local variety tests in recent years.] Sver. Utsädesf. Tidskr. 29: 157–162. 1919.

2. ALTMANNSBERGER, [——]. **Qualitativ und quantitativ Steigerung der Erträge im Zuckerrübenbau durch Kalidüngung.** [Qualitative and quantitative increase in the yield of sugar beets by applying potash to the soil.] Illustr. Landw. Zeitg. 39: 463. 1919.—A brief, popular, article recommending potash as a fertilizer for sugar-beets.—*John W. Roberts.*

3. ANONYMOUS. **Protection of potatoes from cold in transit—lining and loading cars.** U. S. Dept. Agric. Farmers' Bull. 1091. *27 p., 22 fig.* 1920.

4. AZZI, G. **Der agrikultur-meterologiska problemet.** [The agricultural-meteorological problem.] Sver. Utsädesf. Tidskr. 29: 207–220. 1919.—Review of the problems confronting agricultural meteorology, methods of attack, and the value of meteorology to agriculturists and plant breeders.—*E. G. Anderson.*

5. BOLIN, PEHR. **På resultat av lokala fältförsök grundade jämförelser mellan några sädessorter av större betydelse.** [On the result of local field test comparisons between some of the more important varieties of grain.] K. Landtbr. Akad. Handl. och Tidskr. 58: 253–281. 1919. —Compiled results of comparative yield tests of the more prominent varieties of rye, wheat, oats, and peas. These tests were made under field conditions in various parts of Sweden, a number of the tests extending over the period of years from 1912 to 1918. Summary tables only are included.—*E. G. Anderson.*

6. BREAKWELL, E. **Popular description of grasses. The Chloris grasses.** Agric. Gaz. New South Wales 31: 309–314. *Fig. 1–4.* 1920.—*Chloris truncata, C. acicularis* and *C. ventricosa,* native species, are described and illustrated.—*L. R. Waldron.*

7. BRIGGS, GLEN. **Guam corn.** Jour. Amer. Soc. Agron. 12: 149–157. 1920.—An historical record and a general discussion of corn in the island of Guam. Introduction was made from Mexico about 250 years ago.—*F. M. Schertz.*

8. Carrier, Lyman. **The history of the silo.** Jour. Amer. Soc. Agron. 12: 175–182. 1920.—Silos or hermetically sealed grain pits were first used in the dry Mediterranean countries before the Christian era. Egyptian, Spanish, American Indian, Roman, German, French and American types of silos are discussed. The silo in America is especially emphasized.—*F. M. Schertz.*

9. Chodat, R. **Études faites au jardin alpin de la "Linnaea." 1. Sur quelques faits de botanique et de geographie economique a Bourg-Saint-Pierre.** [Observations made at the "Linnaea" alpine garden. 1. Concerning certain things of economic value related to botany and geography at St. Pierre.] Bull. Soc. Bot. Genève 11: 30–41. 1919.—A general description of the mountainous country at St. Pierre (France) is accompanied by a list of wild and cultivated plants that are used for food or medicine.—*W. H. Emig.*

10. Coombs, G. E. **Notes on economic botany during 1918.** Agric. Bull. Federated Malay States 7: 86–88. 1919.—Brief notes on rice culture, green manures, rubber, and coconuts.—*E. D. Merrill.*

11. Damon, S. C. **A five-year rotation of potatoes, rye straw and squashes, onions, oats and rowen, and hay.** Rhode Island Agric. Exp. Sta. Bull. 178. *15 p.* 1919.—The results of the first 24 years are recorded. Every crop in the rotation was grown each year. Stable manure was used only on the squashes; fertilizer on the other crops. There is a comparison of the fertilizer ingredients added, with those removed in the crop; and a discussion of the financial returns.—*B. L. Hartwell.*

12. Derlitzki, [——]. **Zur Sorten und Saatgutfrage der Wintergerste.** [Concerning winter-barley varieties and seed.] Illustr. Landw. Zeitg. 39: 312–313. *Fig. 245–247.* 1919.—A short, popular discussion of winter-barley varieties from the growers point of view.—*John W. Roberts.*

13. Greve, W. **Ratschläge zur Bekämpfung der Ackerunkräuter.** [Advice as to the control of farm weeds.] Illustr. Landw. Zeitg. 39: 200–202. *Fig. 149–161.* 1919.—A popular discussion of the subject. Cultivation, selection of pure seed, drainage, applications of iron sulphate, kainit, and calcium nitrate are the prinicpal measures advocated for the control of various weeds.—*John W. Roberts.*

14. Harris, F. S., and Butt, N. I. **The unreliability of short time experiments.** Jour. Amer. Soc. Agron. 12: 158–167. 1920.—Data from experiments with potatoes, sugar beets, alfalfa, corn, oats, and wheat show that short-time experiments are subject to error where a complete cycle of seasonal fluctuations is not included. Experiments conducted at Logan, Utah, show that the divergence varies in different years. Manuring experiments have wider variations from the average than irrigation experiments. Under dry farming conditions variations are wider than under irrigation conditions and small irrigations vary more than where the optimum amount of water is supplied. Potatoes varied most in yield and were followed by sugar beets, alfalfa, corn, oats, and wheat, in order. Experiments requiring personal judgment vary more than those requiring only mechanical measurements.—*F. M. Schertz.*

15. Hartwell, Burt L. **Thirty-first annual report of the Director of the Rhode Island Agricultural Experiment Station.** Rhode Island State Coll. Bull. 14: 57–65. 1919.—The report is for 1918 and gives brief statements of the results of the experiments, grouped in part under the following headings: organic matter for the soil; efficiency of fertilizers and other manures; specific plant differences and needs; effect of crops on each other; inheritance studies with poultry and rabbits.—*B. L. Hartwell.*

16. Hartwell, Burt L., and S. C. Damon. **A field comparison of hydrated lime with limestone of different degrees of fineness.** Rhode Island Agric. Exp. Sta. Bull. 180. *18 p.* 1919.—During the year of application, 80-mesh limestone had the same effect as an equivalent

amount of hydrated lime; and the percentage of this grade in the 10-mesh limestone represented approximately the first season's efficiency of the calcium oxide equivalent in the limestone as compared with that in hydrated lime. During the 5 years following the single application, the average results were slightly in favor of the hydrated lime—Four crops were grown in each of 5 years on the same plat sections to ascertain their cumulative effect on a single crop of barley grown over the entire area in the field, and on lettuce grown in pots. Arranged in a decreasing series, the order of the crops was the same in accordance with their need for lime, and also their cumulative effect in enhancing acid-soil conditions. The order is as follows: Mangels, carrots, alfalfa, and barley. Where the acidity was reduced by liming, the four crops affected a succeeding crop about uniformly.—*B. L. Hartwell.*

17. Hartwell, Burt L., and S. C. Damon. **The value of sodium when potassium is insufficient.** Rhode Island Agric. Exp. Sta. Bull. 177. *29 p.* 1919.—Field results are reported for 1905 to 1918, of an experiment which was begun in 1894 to ascertain the value of sodium as a partial substitute for potassium. Both elements have been applied in carbonates and in chlorids in connection with two different rates of liming. Nitrogen and phosphorus were added liberally and alike to all plats. Sodium was generally useful where there was an insufficiency of potassium.—Some of the benefits arising from the use of sodium in the field are attributable to indirect action; but solution culture indicates that direct beneficial effects were probably obtained also in the field.—*B. L. Hartwell.*

18. Hartwell, Burt L., F. R. Pember, and G. E. Merkle. **The influence of crop plants on those which follow. II.** Rhode Island Agric. Exp. Sta. Bull. 176. *47 p.* 1919.—Five different crop plants were grown for two or three successive years in pots containing the same soil and then followed by a single crop plant. In case of each crop, uniform fertilizer series were maintained with super-optimum nutrients, with optimum nutrients, and with the latter from which potassium, nitrogen and phosphorus were individually omitted.—When onions constituted the single crop, the yields of onions increased after the crops in about the following order: Buckwheat, mangels, rye, onions, and redtop. Subsequently, when buckwheat was the single crop, its yield increased after the crops arranged about as follows: Redtop, buckwheat, mangels, rye, and onions. The relative effect of the different crops varied somewhat, depending upon the fertilizer treatment, but not as much as would be expected generally.—The divergent effect of crops on those which follow seems not to be attributable, at least principally, to differences in the amount of nutrients removed by the crops grown previously; that is, the smallest yield may not occur after the crop which removes the largest amount of even the most-needed nutrients.—The change which a given application of a nutrient causes in its percentage in the crop depends not only upon its own effect on the rate of growth, but also upon the abundance of the other nutrients in relation to the needs of the crop.—So-called soil acidity was affected differently by the several crops, and their influence on succeeding crops was much less pronounced after thorough liming.—*B. L. Hartwell.*

19. Hibbard, R. P. **Seed potato preparation.** Michigan Agric. Exp. Sta. Quart. Bull. 2: 176–178. *Fig. 5.* 1920.—Reports a small experiment on sprouting of seed pieces of various sizes and effect in yield of size of seed pieces. Pieces with but one eye gave 61 per cent sprouting, with 2 or more eyes 100 per cent sprouting. Whole tubers averaging 4.6 ounces gave a yield of 9 per cent more than the yield from seed pieces averaging 1.4 ounces.—*E. A. Bessey.*

20. Hodson, Edgar A. **Correlations of certain characters in cotton.** Arkansas Agric. Exp. Sta. Bull. 169. *16 p.* June, 1920.—Correlation coefficients have been worked out for a large number of physical characters of cotton and are reported in this publication. The coefficients do not indicate as high a correlation in many cases as has popularly been supposed to exist. There is, however, a very consistent negative correlation between per cent of lint and length of lint, a high positive correlation between weight of seed and size of boll, etc.—*Edgar A. Hodson.*

21. Jenkins, E. H., and G. P. Clinton. **Fertilizer experiments with potatoes.** Connecticut [New Haven] Agric. Exp. Sta. Bull. 214: 421–422. 1917 and 1918.—This is a series of observations on the yields of potatoes as affected by different fertilizers, especially potash. A 4–8–4 and a 2–9–4 each on duplicate plots gave rather uniform yields in 1917. The addition of 1000 pounds wood ashes to the Essex 4–10–0 fertilizer increased the yield somewhat in one case, but was without effect in another. The addition of 2000 pounds wood ashes to the same fertilizer increased the yield somewhat in the first case and in a more pronounced degree in the second. The ashes induced scab. The 4–10–0 fertilizer in 1917 gave as good yields as 4–8–4 when each was applied at the rate of 1000 pounds per acre. In 1918 on other land a 3–8–3 formula in comparison with a 4–10–0 formula each applied at the rate of 1800 pounds—800 pounds before the first harrowing, 400 pounds in the planter and 600 pounds at the second cultivation—gave 50 bushels the greater yield for the potash.—*Henry Dorsey.*

22. Juhlin-Dannfelt, H. **Översikt av ogräslagstiftningen i utlandet. [Review of weed legislation in foreign countries.]** K. Landtbr. Akad. Handl. och Tidskr. 58: 166–174. 1919.—Summary of laws affecting weeds and weed control in European countries, United States, Canada, and Australia.—*E. G. Anderson.*

23. Kiessling, L. **Die Leistungen der Wintergerste und deren Züchterische Beeinflussung. [The yields of winter barley and their significance in breeding experiments.]** Illustr. Landw. Zeitg. 39: 310–311. 1919.—A popular discussion, the importance of the subject being emphasized. The writer's own experiments, carried on since 1911, gave no positive results.—*John W. Roberts.*

24. Kleberger, [——]. **Die wissenschaftliche und praktische Bedeutung der Prüfung des Anbauwertes unserer Oelpflanzen. [The scientific and practical significance of the testing of the agricultural value of our oil-producing plants.]** Illustr. Landw. Zeitg. 39: 249–250. 1919.—The writer discusses chiefly the possible financial returns which may be obtained from the culture of oil-producing plants.—*John W. Roberts.*

25. Kling, M. **Die Düngung des Tabaks. [The fertilization of tobacco.]** Illustr. Landw. Zeitg. 39: 473–474. 1919.—The tobacco plant needs a rather large amount of potash, but should receive as little chlorine as possible. It is well, therefore, to grow tobacco after beets. Crude potash salts should not be used. Stable manure comes first as a fertilizer for tobacco and should be used at the rate of 600 Dz. per hectare. Usually it should be applied in the autumn, but on light soils half should be applied in the spring and half in the autumn. Potassium sulphate at the rate of 4 Dz. per hectare should be applied in the spring. Usually 70 kgm. of ammonium sulphate or better, 35–40 kgm. of urea per hectare are needed. When stable manure is used, phosphoric acid is not necessary. Too much phosphoric acid causes early maturity and poor quality. Calcium should be applied to soils in which it is lacking.—*John W. Roberts.*

26. Lenart, G. H. **Neue Verarbeitungsweise der Zichorie. [New manufactured products from chicory.]** Illustr. Landw. Zeitg. 39: 479–480. 1919.—The new products are: (1) inulin, from which levulose and a liquid sugar-dye are obtained; (2) chicory sirup, from which may be obtained a coffee substitute, a sugar-dye in dry form, and alcohol; (3) dry shreds, which may be used as feed for animals.—*John W. Roberts.*

27. Maiden, J. H. **Chats about the prickly pear.** Agric. Gaz. New South Wales 31: 325–332. *4 fig.* 1920. Discusses the use of *Opuntia* spp. as a feed for stock.—*L. R. Waldron.*

28. Mundy, H. G. **Improvement of Rhodesian pastures.** Rhodesia Agric. Jour. 17: 113–117. *4 pl.* 1920.—Encouraging results have been obtained with grasses indigenous to Africa, which have in general proved more successful than exotic species.—*E. M. Doidge.*

29. Neumeister, [——]. **Die Verwendung des Ammoniak—Superphosphats als Kopfdünger zu Winterroggen. [The use of ammonium superphosphate as the chief fertilizer for winter rye.]** Illustr. Landw. Zeitg. 39: 145–146. 1919.—As the result of three experiments in the use of fertilizers for winter rye, the author considers ammonium superphosphate to be promising as chief fertilizer. Additional experiments are being carried on.—*John W. Roberts.*

30. Pantanelli, E. **Utilizzazione della cannarecchia o sorgagna. [Utilization of Johnson grass.]** Staz. Sper. Agr. Ital. 52: 405–415. *Pl. IX.* 1919.—A short note designed to draw attention to the possibility of utilizing *Sorghum halepense* (L.) Pers. in the agricultural explorations of dry countries. The plant is stated to be indigenous in Italy, but it has not been considered as an agricultural crop up to the present time. Its utilization in America, however, shows its great possibilities for this purpose.—*A. Bonazzi.*

31. Piper, C. V., and Lyman Carrier. **Carpet grass.** U. S. Dept. Agric. Farmers Bull. 1130. *12 p. 5 fig.* 1920.—Carpet grass (*Axonopus compressus* (Swartz) Schlecht.) the most important grass for permanent pasture in the Coastal Plain area of the South. Is not a native, but was accidentally introduced from tropical America before 1830 and has spread generally over the Southern States. The plant requires a moist or at least not droughty soil and succeeds better in such soils if sandy than any other pasture grass. The minimum temperature it will survive is about 10°F. Carpet-grass pastures are readily established in tilled land by seeding at any time from early spring to late summer on a well-firmed seed bed, when moisture conditions are favorable. On unbroken or stump land good results can be secured by burning or mowing the tall native grasses, seeding at a favorable time, and then pasturing to keep the native bunch grasses constantly short. Under this treatment the native grasses are eradicated in one or two years and replaced by a pure stand of carpet grass. The carrying capacity of good carpet-grass pasture is one cow to the acre for the five best months and one cow to 2 acres for 3 to 5 months longer. Dallis grass, lespedeza, white clover, bur clover, black medic, and Augusta vetch are desirable in mixture with carpet grass. Italian rye may be used as a winter mixture, but needs to be sown each fall. Under some conditions redtop should be used to precede carpet grass. Carpet-grass pastures should be grazed to their capacity, as under heavy grazing the best condition is maintained. Bitterweed and dog fennel are the only two weeds that seriously invade carpet-grass pastures. During the first two seasons these weeds should be mowed before they ripen seeds. Thereafter they will cause but little trouble, but mowing should be resorted to when necessary. Seed of carpet grass is easily harvested by mowing and thrashing. Large areas of pure or nearly pure carpet grass occur in several regions in the South. Up to the present the quantity of seed produced has been only a fraction of that required. A comprehensive plan has been devised to increase greatly the harvesting of seed, as the outstanding need to stimulate a much greater use of carpet grass for pasture is an ample seed supply.—*Authors' summary.*

32. Roberts, Herbert F. **Yellow-berry in hard winter wheat.** Jour. Agric. Res. 18: 155–169. 1919.—Opaque, starchy spots in wheat kernels, which give rise to the name "yellow-berry," almost invariably appear near the embryo, the proximal end of the kernel, and spread from there upward. Seventy-seven pure lines of wheat were grown in comparison with 87 lots of a standard variety, Kharkov, to determine the relation of yellow-berry to field conditions, especially with reference to the period between first heading and ripening.—The operation of common causes for the production of yellow-berry overshadows any differences that may be due to hereditary tendencies and preclude a definite statement regarding the relation of hereditary tendencies in hard winter wheat toward the production of yellow-berry. "That some isolated pure strains of wheat are freer from yellow-berry than others growing in the same field and apparently under identical conditions of soil and climate is, however, possible." The percentage of yellow-berry is higher with the later dates of ripening. Starch grains in the yellow-berry portion of a kernel are smaller than those in the flinty part. Yellow-berry kernels average 0.4 mgm. heavier than flinty kernels; their specific gravity is 0.023 greater; they contain a greater percentage of moisture and of starch, and a lesser percentage of protein and ash than flinty kernels.—*D. Reddick.*

33. Schleh, [——]. **Einfluss der Aufbewahrung der Kartoffeln auf den Ertrag.** [Influence of the storage of potatoes upon the yield.] Illustr. Landw. Zeitg. 39: 429–430. 1919.—A popular discussion of the proper storage of potatoes in relation to their use as seed. According to the writer, too high temperatures during storage are the chief causes of seed degeneration.—*John W. Roberts.*

34. Simpson, S. **Annual Report of the Department of Agriculture, Uganda Protectorate, for the year ending 31st March, 1918.** *69 p.* Uganda Protectorate Dept. Agric. 1918.

35. Spragg, Frank A. **The coefficient of yield.** Jour. Amer. Soc. Agron. 12: 168–174. 1920.—The coefficient of yield is the quotient obtained by dividing the yield of a variety by the calculated yield of the standard or check variety, growing on the same plot the same year. The coefficient of yield method of interpreting results have been used for 6 years and has proven superior to any of the old methods. A compound coefficient of various factors affecting yield, is illustrated showing how it is possible to find superior varieties of field crops. —*F. M. Schertz.*

36. Spring, F. G., and J. N. Milsum. **Notes on the cultivation of ragi (Eleusine coracans).** Bull. Dept. Agric. Federated Malay States 7: 154–161. 1919.—Results are given of the introductory tests of this grain into Malaya, also a consideration of it as a commercial crop.—*T. F. Chipp.*

37. Sylven, Nils. **Är det möjligt att inom landet återupptaga en mera omfattande odling av oljeväxter för industriens behov av feta oljor?** [Is it possible to again take up a more comprehensive domestic production of oil plants to supply the demands of industry for fatty oils?] Sver. Utsädesf. Tidskr. 29: 173–205. 1919.—Summary of oil production in Sweden in previous years; effect of the war; factors affecting present demands for oils and present production; market conditions and future prospects.—*E. G. Anderson.*

38. Tedin, Hans. **Tre års försök med olika havresorter vid Hallands Frökontor i Getinge.** [Three years tests of different varieties of oats at the Halland seed office at Getinge.] Sver. Utsädesf. Tidskr. 29: 224–230. 1919.

39. Voss, C. **Zur Bekämpfung von Ackersenf und Hederich.** [On the control of field-mustard (Sinapis arvensis L.) and hedge-mustard (Raphanus raphanistrum L.).] Illustr. Landw. Zeitg. 39: 324–325. 1919.—Excellent results were obtained by dusting the weeds with a finely ground mixture of kainit (2.5 Ztr.) and calcium nitrate (17.5 kgm.), especially when applied while the weeds were covered with dew. A solution of ammonium sulphate, applied as a spray, proved superior to a solution of iron sulphate similarly applied. The former proved to be the better weed-killer and was less injurious to cultivated plants.—*John W. Roberts.*

40. Wadsack, A. **Anbau der wichtigsten Oelfruchte.** [The culture of the more important oil-producing plants.] Illustr. Landw. Zeitg. 39: 275–280. 1919.—A short, popular, discussion advocating greater production of oil-producing plants to meet the shortage of animal fats.—*John W. Roberts.*

41. Weibull, M. **Om fetthalten i skånska rapsfrön år 1918.** [On the oil-content of Skåne rape-seed in 1918.] K. Landtbr. Akad. Handl. och Tidskr. 58: 236–240. 1919.—Results of determinations of oil content of rape seed grown in 1918 in different parts of Skåne and under varying conditions.—*E. G. Anderson.*

42. Witte, Hernfrid. **Omfattning of Danmarks nuvarande fröodling.** [Summary of present seed production in Denmark.] Sven. Utsädesf. Tidskr. 29: 163–164. 1919.

BIBLIOGRAPHY, BIOGRAPHY AND HISTORY

Lincoln W. Riddle, *Editor*

43. Anonymous. **Early collections in the garden herbarium.** Missouri Bot. Gard. Bull. 7: 29–35. *Pl. 8–11.* 1919.—A discussion of the Bernhardi, Haenke, Rottler, and other important collections.—*O. T. Wilson.*

44. Anonymous. **Claude Keith Bancroft.** Kew Bull. Misc. Inf. [London] 1919: 86. 1919. —C. K. Bancroft, who died in 1919, began his botanical career as a research student in mycology and plant pathology at the Jodrell Laboratory, Kew, England. Later he was Assistant Mycologist in the Malay States. At the time of his death he was Government Botanist of British Guiana.—*L. W. Riddle.*

45. Anonymous. **Sir Edward Fry.** Kew Bull. Misc. Inf. [London] 1919: 84–85. 1919.— The subject of this notice died October 18, 1918. He was a lawyer by profession; but was a lifelong amateur student of the British flora, cryptogamic as well as phanerogamic.—*L. W. Riddle.*

46. Anonymous. **Hector Leveille.** Kew Bull. Misc. Inf. [London] 1919: 85. 1919.— Leveille (1863–1918) was the founder of the Académie Internationale de Géographie Botanique; editor of the *Bulletin de Géographie Botanique*; author of monographic studies of the Onagraceae; and of papers on the flora of China.—*L. W. Riddle.*

47. Barker, B. T. P., and G. Neville. **Arthur Eckley Lechmere.** Kew Bull. Misc. Inf. [London] 1919: 164–168. 1919.—This is an account of a promising young English mycologist who died in 1919 at the age of thirty-four. After studying mycology and plant pathology in England, he became a research student, first in the laboratory of Prof. L. Mangin, in Paris, and then in that of Prof. Tubeuf, in Münich. There he was working at the time of the outbreak of the war. He failed to leave Germany in time, and was interned for four years. During this period he taught in the prison camps whenever possible, but the hardships which he suffered led to his death within a year of his return to England.—*L. W. Riddle.*

48. Burnham, Stewart H. **Charles Horton Peck.** Mycologia 11: 33–39. *Portrait.* 1919.—Peck was born March 30, 1833, in Sand Lake, Rensselaer County, New York. After passing through the State Normal School, he spent four years at Union College, graduating with honors in 1859. "While at Union, he received his botanical instruction from Prof. Jonathan Pearson; and in place of athletics, he made botanical excursions." While teaching at Albany, he presented to the State a collection of mosses, which was seen by Judge G. W. Clinton; and it was through Clinton that he was appointed to the State Cabinet of Natural History in 1867. At that time there were about 1800 specimens in the herbarium. "The Rev. Moses A. Curtis, of North Carolina, first gave Peck a start in the study of fungi . . . ." In 1883 he was appointed to the newly-created office of State Botanist, which he held up to 1915. In 1908 Union College conferred upon him the degree of Doctor of Science. —"Dr. Peck was the author of many botanical articles and reports, pre-eminent among which is the long series of annual reports of the State Botanist from 1867 to 1912." He died at Menards, July 11, 1917.—*H. R. Rosen.*

49. [Dodge, B. O.] **Index to American mycological literature.** Mycologia 11: 47–50. 1919.—A list, covering portions of the years 1917 and 1918, of mycological and pathological articles appearing in American publications, is presented.—*H. R. Rosen.*

50. [Dodge, B. O.] **Index to American mycological literature.** Mycologia 11: 227–230. 1919.—Fifty-four articles are listed, some of which appeared in 1918 and others in 1919.— *H. R. Rosen.*

51. [Dodge, B. O.] **Index to American mycological literature.** Mycologia **11**: 284–287. 1919.

52. [Dodge, B. O.] **Index to American mycological literature.** Mycologia **11**: 323–326. 1919.

53. [Dodge, B. O.] **Index to American mycological literature.** Mycologia **12**: 55–58. 1920.

54. Gertz, Otto. **Caroli Linnaei Flora Kofsöensis 1731.** [Swedish.] Bot. Notiser **1919**: 85–93. 1919.—The author publishes and discusses a manuscript of Linnaeus, the original of which is found in the library of the Linnean Society in London, and a somewhat varying copy in the University Library at Upsala. On a journey, Linnaeus stopped for half an hour on a little island (180 steps in circumference), in Lake Mälar, Sweden, and made there a record of 81 phanerogams. The names used in this list were mostly those used by Caspar Bauhin and Tournefort. In footnotes are given the names used by Linnaeus for the same plants in the second edition of his Flora Suecica, 1755.—*P. A. Rydberg.*

55. Goff, E. S. **A sketch of the history of horticulture. (Lecture notes prepared in 1889.)** Wisconsin Hortic. **9**: 50–51. 1919.—The origin of the art of horticulture among the peoples of the Orient, the Greeks and the Romans is briefly outlined.—*G. F. Potter.*

56. [Grove, W. B.] **George Stephen West, M.A., D.Sc., F.L.S. (1876–1919).** Jour. Botany **57**: 283–284. 1919.—West was born at Bradford, April 20, 1876. His father was interested in plants. The son began early to specialize in algae, especially in desmids. He passed through Bradford Technical College, the Royal College of Science, London, and St. John's College, Cambridge. There he was Hutchinson Research student, and demonstrator in biology to the University. Later he was lecturer in natural history at the Royal Agricultural College, Cirencester, and lecturer in botany at the University of Birmingham. At the retirement there of Hillhouse in 1909 he succeeded to his chair, and in 1916 became Mason Professor. He was an excellent teacher and lecturer, greatly enlarged and improved his department, and created a large herbarium. West was the leading British expert on Freshwater Algae, and on the desmids in particular. His principal works are listed, and comment is made on two projected works, one on British Freshwater Algae and the other on the algal flora of the Midlands. His drawings of algae were all bequeathed to the British Museum, but his algological library and specimens went to the University of Birmingham.—*K. M. Wiegand.*

57. Longo, B. **La "Viola di S. Fina" di S. Gimignano.** ["St. Fina violet."] Ann. Botanica [Roma] **14**: 179–180. 1917.—Historical discussion of the plant referred to by the above mentioned common name. The author identifies it as *Cheiranthus Cheiri* Linn. A record is also made of the natural growing together by spontaneous grafting of two oaks of different species.—*J. A. Nieuwland.*

58. Naumann, Einar. **Vegetations färgningar i äldre tider. Biologiskt-Historiska Notiser III. En Planctonfärgning i sjön Barken, Dalarne, år 1697. [Vegetable colorations in olden times. Biologic historical notices, III. A Plankton-coloration in Lake Barken, Dalecarlia (Sweden), in 1697.]** (Swedish, with German résumé.) Bot. Notiser **1919**: 65–82. 1919.—The author gives the history of the phenomenon as recorded by Urban Hjärne, Jesper Svedberg, and Johan Groot, in 1702–1710. He arrives at the conclusion that it was due to plankton coloration, and suggests as the cause an unusually abundant development of *Botryococcus Braunii, Oscillatoria Agardhii* or species of *Glenodinium*, most likely the last-mentioned.—*P. A. Rydberg.*

59. Nordstedt, C. T. O. [Swedish rev. of: Bryk, F. **Linné's Minnesbok (a facsimile reprint of the diary of Linnaeus, 1734–1737).** Stockholm, 1919.] Bot. Notiser **1919**: 136. 1919.

60. Reed, Howard S. **Volney Morgan Spalding.** Plant World 22: 14–18. *Portrait.* 1919.—This is a sympathetic appreciation of the life and work of Volney M. Spalding, from 1876 to 1904 connected with the botanical department of the University of Michigan. In the latter year, he resigned because of ill-health. After a year spent in California, he took up his residence at the Desert Laboratory at Tucson, Arizona, where he carried on investigations for the next four years. After 1909, he was obliged to give up active work, on account of declining health, which finally resulted in his death on November 12, 1918.—*L. W. Riddle.*

61. Schweinfurth, G. **Pflanzenbilder im Tempel von Karnak (Theben).** [Plant pictures in the Karnak temple (Thebes).] Bot. Jahrb. 55: 464–480. 1919.—This is an attempt to identify the 275 representations of plants in the 27 photographs taken by H. Schafer in the "botanical room" of the Ammon Temple, Karnak. Most of these are small figures interspersed in vacant places among branches and large plants. Only six or seven plants could be identified with reasonable surety as follows: *Nymphaea coerulea*, *Punica granatum*, *Arum italicum*, *Dracunculis vulgaris*, *Calenchoe deficiens* (?), *Iris* sp. and *Vitis vinifera*. The artist seems to have delineated many species not native of Egypt, sometimes from memory. The sparing use of trees is astonishing as they were much used by Egyptians in decorative work. They are here mostly in winter condition, and represent such genera as *Morus*, *Pyrus*, *Prunus*, and some other genera found in Egypt. Many pictures combine different plants as the centaurs did different animals. Some are diagrammatic and represent no particular plant. *Nymphaea* occurs at least 45 times, and *Punica* 20 times. This is the earliest illustration of *Punica granatum* in Egypt, where it was probably introduced about 1475 B. C. The form illustrated was fastigiate, and is now rare in those countries. *Allium* is represented by a leaf and several fruits in a row. It is probably *A. italicum*. *Dracunculus* is represented seven times. The *Calenchoe* is most closely related to a species of Abyssinia. The three Iris flowers in the room may represent three different species as they are all different. In most Egyptian bas-reliefs only *I. pallida* was represented, a plant not now found in Egypt. The figure may possibly have been made from *Iris germanica*, the "orris root" which was an old Egyptian plant later introduced into other countries because of its fragrant root-stock.—*K. M. Wiegand.*

62. Smith, Annie Lorrain. **Worthington G. Smith as mycologist.** Trans. British Mycol. Soc. 6: 65–67. 1918.—A short appreciation including mention of his more important mycological papers. His ability as a botanical artist is emphasized and some of his better known sets of illustrations are cited.—*H. M. Fitzpatrick.*

63. Spoehr, H. A. **The development of conceptions of photosynthesis since Ingen-Houss.** Sci. Monthly 9: 32–46. 1919.

64. Viardin, L. **L'organisation forestière, avant 1789, dans la Lorraine reconquise.** [Forest organization in reconquered Lorraine prior to 1789.] Rev. Eaux et Forêts 57: 80–85. 1919.

65. Wakefield, E. M. **Charles Ogilvie Farquarson.** Trans. British Mycol. Soc. 6: 236–237. 1919.—An obituary notice and expression of appreciation of this British mycologist who was lost at sea in October, 1918. For six years preceding his death, he was Mycologist in South Nigeria, West Africa. He published in conjunction with Miss Lister an account of the South Nigerian Mycetozoa, and collected a number of interesting fungi which were later listed in Kew Bull. Misc. Inf.—*H. M. Fitzpatrick.*

66. Woodruff, L. L. **Hooke's Micrographia.** Amer. Nat. 53: 247–264. 1919.—Quotations from Waller's biography of Robert Hooke; summary of objects microscopically surveyed in Micrographia; facsimile reproduction of portions of text referring to "little boxes or cells" in cork.—*J. P. Kelly.*

BOTANICAL EDUCATION

C. Stuart Gager, *Editor*
Alfred Gundersen, *Assistant Editor*

67. Bergey, D. H. **The teaching of elementary systematic bacteriology.** [Author's abst. of paper read before Soc. Amer. Bact.] Absts. Bact. 4: 1. 1920.—The student is given a list of simple and expressive terms to be used in the description of cultures. All the observations and descriptions of cultures are entered in unruled note books about 8 by 10 inches. Simple methods of staining are practiced on different morphologic types of non-pathogenic bacteria. Drawings are made of each organism studied. The student is taught how to transplant cultures from one medium to another and to isolate bacteria in pure culture from mixed cultures by the plate method. The pure cultures are planted on all the usual laboratory media for a systematic study. The observations and descriptions in the systematic study are entered in the student's note book in a definite order. The descriptions are made according to the terminology given. The character and the progressive development in the cultures are illustrated by drawings.

68. Campbell, Douglas Houghton. **The springtime garden in California.** Nat. Study Rev. 16: 181–188. 1920.—Describes California garden conditions, with mention of manzanita, almond, toyon, eucalyptus, daphne, narcissus, iris and other plants.—*A. Gundersen.*

69. Kirkhuff, Pauline. **The flower land—California.** Nat. Study Rev. 16: 228–230. 1920.

70. Palmer, Clayton F. **Agriculture in the elementary schools of Los Angeles City.** Nat. Study Rev. 16: 217–220. 1920.

71. Riley, Dolores. **California's tree islands.** Nat. Study Rev. 16: 223–224. 1920.—Monterey pine, Monterey cypress, Torrey pine.

72. Rogers, Julia Ellen. **At Palm Springs with the Sierra Club.** Nat. Study Rev. 16: 195–197. 1920.

FOREST BOTANY AND FORESTRY

Raphael Zon, *Editor*
J. V. Hofmann, *Assistant Editor*

73. Adamson, R. W. **The Bartram oak.** Sci. Amer. 122: 301. 1920.

74. Afzal, Muhammed, and others. **Progress report of forest administration in Baluchistan for 1918–19.** *24 p.* Calcutta, 1920.—An area of 313 square miles of reserved forests is reported and 472 square miles of unclassed forests with no changes in the last 5 years. The chief object of forest policy aimed at in this Province is to preserve the few existing forests and thereby prevent denudation. The forests are administered for the public benefit. The reservation of the forests does not aim at any profit to the Government but at checking destruction by regulating the rights and restricting the privileges of users. The financial statement shows these averages, for the last 5 years: Revenue, 20,539 Rs, Expenditure 28,130 Rs, giving a deficit of 7591 Rs. During the past year the deficit sank to 2403 Rs against a 13,607 Rs deficit the previous year. The area open to grazing was 45.3 per cent of the total area of the State forests. In experimental planting deodar and blue pine failed to germinate but chil was satisfactory. There was heavy winter loss of chil seedlings but those surviving give good promise. Natural reproduction of the hill species is scarce in all forests as there was a bad seed year. Babool and Jhand seedlings started in the Sibi forests but were killed by failure of the summer monsoon. Coppice reproduction of tamarisk and willow has, as usual,

been successful in all localities. Out of a number of exotics, Turkey oak, American maple and alder are growing well, catalpa and osier have given the best results and can safely be regarded as successful, saffron plants have completely disappeared and *Eucalyptus rudis* has not proven a success. European olive plants and cuttings have given fair success. The usual formal tabulated statements are appended.—*E. R. Hodson.*

75. Anonymous. Future organization of the forest department of India. Indian Forester 45: 234–239. 1919.

76. Anonymous. List of seeds of hardy herbaceous plants and of trees and shrubs. Kew Bull. Misc. Inf. [London] 1919: Appendix 1–23. 1919.—See Bot. Absts. 4, Entry 844.

77. Anonymous. Nogel Undersøgelser og Forsøg Med Musegift. [Some investigations on poison for mice.] Dansk Skovforenings Tidsskr. 4: 396–401. 1919.

78. Anonymous. Sugar and alcohol from the nipa palm. Sci. Amer. Monthly 1: 310. 1920.—Extract of an article in Bull. Manila Bur. Sci.

79. Bailey, I. W. Depressed segments of oak stems. Bot. Gaz. 67: 438–441. *4 fig.* 1919.—See Bot. Absts. 4, Entry 994.

80. Bardie, A. Excursion mycologique de la Société Linnéenne à Léognan le 12 Novembre, 1916, nos bieilles forêts; nécessité de leur conservation. [Mycological excursion of the Linnean Society to Léognan, Nov. 12, 1916.] Actes Soc. Linn. Bordeaux (Proces-verbaux) 69: 105–113. 1915–16.—The author emphasizes the value of the forests as a national asset. A list of the fungi collected is included.—*W. H. Emig.*

81. Baxter, Samuel Newman. How nurserymen may best compete for the Christmas tree market. Florists' Exchange 49: 133. 1920.—See Bot. Absts. 5, Entry 518.

82. Beck v. Mannagetta, and G. Lerchenau. Wacholderbeeren mit entblöszten Samen. [Juniper berries with exposed seeds.] Sitsungsber. K. Akad. Wiss. Wien (Matht. Nat. Kl.) 126: 403–419. *Fig. 1–31.* 1917.—See Bot. Absts. 4, Entry 983.

83. Beekman, H. 78 Preanger-houtsoorten, beschrijving, afbeelding en determinatie-tabel. [78 Preanger timber species described, illustrated, and determination table.] Mededeel. Boschproefsta. Dept. Landb., Nijverheid en Handel Nederlandsch-Indie 5: 1–186. *60 pl.* (*photomicrographs*). 1920.—In the lumber market of western Java, especially the Preanger residencies, teak is scarce and does not occupy a predominant place. On this account many other kinds of woods which occur in the mountain forests are used. The market distinguishes only three quality classes. Owing to the lack of knowledge concerning the characteristics of these woods this practical guide for their determination is published. Following a popular description of the elements of wood structure, each of the 78 kinds is described under the headings, general impression, appearance, detailed characteristics by use of hand lens, nature of extract, and burning. Of the 28 families represented the following contain the most important species: Dipterocarpaceae, Fagaceae, Hamamelidaceae, Lauraceae, Leguminosae, Magnoliaceae, Malvaceae, Meliaceae, Myrtaceae, Rubiaceae, Taxaceae, Theaceae, Verbenaceae.—*F. Kramer.*

84. Beeson, C. F. C. Food plants of Indian forest insects. Indian Forester 45: 312–323. 1919.—Continuing work previously noted, 83 species belonging to three families are listed with the plants upon which they feed.—*E. N. Munns.*

85. Berry, E. W. The history of the linden and ash. Plant World 21: 163–175. *3 fig.* July, 1918. 1919.—See Bot. Absts. 4, Entry 1202.

86. Beumée, J. G. B. **Over Bastverwondingen aan den djati.** [Bark wounds of teak.] Mededeel. Proefsta. Boschw. Dept. Landb. Nijverheid en Handel Nederlandsch-Indië **4**: 31–54. *Pl. 12–17.* 1919.—See Bot. Absts. 6, Entry 218.

87. Bixby, W. G. **The butternut and the Japan walnut.** Amer. Nut Jour. **10**: 76–79, 82, 83, *11 fig.* 1919.—See Bot. Absts. 5, Entry 329.

88. Cooper, G. M. **Growth of sal from broadcast sowings.** Indian Forester **45**: 310–312. 1919.—An average girth of 5.17 inches and an average height of 12 feet 2 inches was made by a sal plantation from broadcast seed in 5 years from sowing.—*E. N. Munns.*

89. Dixon, H. H., and W. R. G. Atkins. **Osmotic pressures in plants. VI. On the composition of the sap in the conducting tracts of trees at different levels and at different seasons of the year.** Sci. Proc. Roy. Dublin Soc. **15**: 51–62. 1918.—See Bot. Absts. 5, Entry 848.

90. Eaton, B. J. **Commercial possibilities of Para rubber seed oil.** Agric. Bull. Federated Malay States **7**: 73–78. 1919.—Gives the results, yield, and sale price, of an experimental shipment of $25\frac{3}{4}$ tons of seeds to England.—*E. D. Merrill.*

91. Ferreri, E. **Dati dendrometrici sul faggio della foresta inalienabile di Camaldoli.** [Dendrometric data on Fagus in the inalienable forest of Camaldoli.] Staz. Sper. Agr. Ital. **52**: 542–543. 1919.—*A. Bonazzi.*

92. Ferreri, E. **Applicazione di dieci metodi di cubatura per la determinazione della massa legnosa di 42 piante di abete bianco in piedi della foresta inalienabile di Camaldoli.** [The applicability of ten methods for determining the total quantity of lumber in 42 standing plants of white pine in the forest of Camaldoli.] Staz. Sper. Agr. Ital. **52**: 587–598. 1919.—A comparative study of the different methods.—*A. Bonazzi.*

93. Glover, H. M. **Spruce red wood.** Indian Forester **45**: 243–245. 1919.—A red "heartwood" is often formed in the Himalayan spruce, which is moister than sapwood and cannot be floated. This dries out readily but after being placed in water regains its original specific gravity.—*E. N. Munns.*

94. Harper, Roland M. **The supposed southern limit of the eastern hemlock.** Torreya **19**: 198–199. Oct., 1919.—See Bot. Absts. 4, Entry 337.

95. Hartley, Carl, T. C. Merrill, and Arthur S. Rhodes. **Seedling diseases of conifers.** Jour. Agric. Res. **15**: 521–558. *Pl. B.* 1918.—See Bot. Absts. 4, Entry 1296.

96. Hawes, A. F. **Cooperative marketing of woodland products.** U. S. Dept. Agric. Farmers' Bull. 1100. *15 p., 6 fig.* 1920.

97. Heimlich, Louis F. **The trees of White County, Indiana.** Proc. Indiana Acad. Sci. **1917**: 387–471. *34 pl.* 1918.—See Bot. Absts. 4, Entry 338.

98. Henkel, J. S. **Why grow trees?** Rhodesia Agric. Jour. **17**: 137–141. 1920.

99. Hollick, A. **The story of the Bartram oak.** Sci. Amer. **121**: 422, 429–430, 432. *6 fig.* 1919.—See Bot. Absts. 4, Entry 615.

100. Kotze, J. J., and E. P. Phillips. **A note on the genus Faurea Harv.** South African Jour. Sci. **16**: 232–238. *Pl. 13–18, 2 fig.* 1919.—*Faurea natalensis* is evidently confined to the eastern coastal forest belts. *Faurea Mcnaughtonii* is only known from Knysna, where it is confined to the Lily Vlei Forest. *Faurea saligna* is used for fence posts, as a wagon wood and for furniture, etc. It is said to be fairly ant resistant. *Faurea Mcnaughtonii* is remarkable for the durability of its timber, which compares favorably with that of the sneezewood.—*E. P. Phillips.*

101. Marshall, Roy E., and F. D. Fromme. **Red cedar trees and cedar rust: a report of a cedar rust survey of Augusta county, Virginia.** Virginia Polytechnic Inst. Ext. Bull. 39. *8 p. 1 fig.* 1920.—See Bot. Absts. 4, Entry 1317.

102. Mörk-Hansen, K. **C. H. Schröders udhugning i bög.** [C. H. Schröder's thinning system in beech forest.] Forst. Forsögsväsen Danmark 5: 156–178. *Pl. 1–2.* 1920.—The tables and discussion cover growth and recovery in three-storied beech forest in Denmark after the Schröder method of thinning, which aims at producing straight, clear-boles trunks from previously suppressed trees. The principle guiding the cutting may be summed up in saying "Cut what is harmful and useless." The forester must know, however, how the trees are going to respond, what space they need for best development, etc. After thinning, the trees in the second story will help prune the upper, and those in the third story will help prune those in the second story.—*J. A. Larsen.*

103. Opperman, A. **Sommerfälding i Bögeskov.** [Summer-cutting in beech forest.] Forst. Forsögsväsen Danmark 5: 180–192. 1920.—Beech cut in summer to be used for fuel during the following winter showed insufficient drying.—*J. A. Larsen.*

104. Robson, W. **Bay trees (Pimenta acris).** Rep. Agric. Dept. Montserrat 1917–18: 17. Imp. Dept. Agric. Barbados, 1919.—See Bot. Absts. 5, Entry 820.

105. Rose, R. C. **After-ripening and germination of seeds of Tilia, Sambucus and Rubus.** Bot. Gaz. 67: 281–309. 1919.—See Bot. Absts. 4, Entry 1574.

106. Rumbold, Caroline. **The injection of chemicals into chestnut trees.** Amer. Jour. Bot. 7: 1–20. *7 fig.* 1920.—See Bot. Absts. 5, Entry 964.

107. Sabroe, Axel S. **Skovträer i det nordlige Japan.** [Forest trees of northern Japan.] Forst. Forsögsväsen Danmark 5: 105–155. *Pl. 2–28, 1 fig.* 1920.—A report setting forth what Japanese forest trees may be suitable for culture in Denmark. The forests of Japan have been classified altitudinally into four zones: torrid, sub-tropical, temperate and frigid. Since the climate in the temperate zone is more nearly like that of Denmark, only the trees in this zone are considered. Much space is given to comparative data on temperature and precipitation for different stations, and there are many excellent views and valuable information concerning the trees; however, since the climate of Denmark is essentially continental and that of Japan insular, little hope is expressed for the success of experimental introduction. *Cryptomeria japonica* appears only where there is protection to the roots by deep snow; *Pinus thunbergii*, which grows along the coast, may prove a better species in Denmark than *Pinus montana*; *Abies sachaliensis*, *Quercus dentata* and *Larix kurilensis* should be tried on the Danish downs. *Larix leptolepis* is more immune from *Sasyscypha willkommii* than *L. europaea.* The Japanese beech is not more promising than the European. Several smaller broadleaves, among which are *Acanthopanax ricinifolius*, *Cercidiphyllum japonicum*, *Quercus grosserata*, *Fraxinus manshurica* and *Betula maximowiczii*, are recommended for trial.—*J. A. Larsen.*

108. Sargent, C. S. **Notes on North American trees. V.** Jour. Arnold Arboretum. 1: 61–65. July, 1919.—See Bot. Absts. 4, Entry 1766.

109. Sim, T. R. **Soil erosion and conservation.** South African Jour. Indust. 2: 1034–1042. 1919.—See Bot. Absts. 4, Entry 1635.

110. Smythies, E. A. **Geology and forest distribution.** Indian Forester 45: 239–243. 1919.—There is a relation between geology and forest types which apparently so far has been neglected in type studies. A plea is made for a closer study of geological formations in connection with such work.—*E. N. Munns.*

111. Troup, R. S. **Experiments in the pollarding of Butea frondosa for lac cultivation.** Indian Forester 45: 223–233. *Pl. 14, 15.* 1919.—Pollarding of *Butea frondosa* is possible without seriously affecting the vitality of the trees, and the best results are obtained by pol-

larding on an annual rotation, half being cut for the summer crop, and half for winter. Isolated trees produce more lac than those in dense stands, and thinning is necessary in congested stands. Predacious insects should be killed by prompt treatment after harvest by burning litter and by fumigation.—*E. N. Munns.*

112. Weir, James R., and Ernest E. Hubert. **A study of the rots of western white pine.** U. S. Dept. Agric. Bull. 799. *24 p.* 1919.—See Bot. Absts. 4, Entry 1379.

HORTICULTURE

J. H. Gourley, *Editor*

FRUITS AND GENERAL HORTICULTURE

113. Anonymous. **The dwarf cocoanut in Malaya.** Tropical Life 16: 54–55. 1920.—Review of an article by W. P. Handover in a recent issue of Agric. Bull. Federated Malay States, describing the dwarf coconut known in Malaya as Nyor Gading or ivory coconut. The dwarf variety is hardy, begins bearing in its fourth year, often at a height of only 10 feet, and bears nuts of especially good quality.—*H. N. Vinall.*

114. Conners, C. H. **Some notes on the inheritance of unit characters in the peach.** Proc. Amer. Soc. Hortic. Sci. 16: 24–36. (1919) 1920.—This paper presents the data secured from the first crop picked from the first generation seedlings from crosses among commercial varieties of peaches. The parents used in one series of crosses were Elberta, Belle, Greensboro and Early Crawford. Although most of the seedlings bloomed at the normal period of bloom for the varieties used, still several of them bloomed from 4 to 8 days later. This would be desirable from the standpoint of irritability or tendency to start into growth during the warm spells in the winter. Blossoms of the peach may be arranged into three groups as regards size: large, medium, small.—Early Crawford, a small-blossom variety, when self-pollinated gave seedlings, the blossoms of which were nearly all small.—When small-blossom varieties were crossed with large-blossom varieties, the seedlings had medium sized blossoms.—The results seemed to indicate that the medium-size blossom was an intermediate, for when crossed among themselves or selfed the seedlings split into approximately the Mendelian rate for hybrids, large blossoms being dominant. Indications seem to point to two pure types of bloom, the large and the small, with the medium-sized blossom as an intermediate.—In addition to the correlation between the color of the inside of the calyx cup and the flesh of the fruit as described by Hedrick, a correlation between the color of the leaves, midrib and veins and the color of the fruit is given.—Ripening dates of the crosses did not vary much from those of the parents, although there were certain exceptions. It would seem that a cross between a pure white and a pure yellow would give all white flesh in the F_1. —Wherever a white-fleshed variety is crossed upon a yellow-fleshed variety, the seedlings show a marked increase in vigor over that of the yellow parents. This is especially true where Greensboro is used.—Freestone × freestone gave about two-thirds freestone seedlings and one-third semi-cling or cling. Freestone×clingstone gave a large proportion of clingstone seedlings, varying with the degree of cliginess of the parents and with the power of the freestone parent to product freestone seedlings.—From an economic aspect a number of the seedlings are outstanding and have been propagated for further trial. Among these are: (1) Several seedlings of Belle × Greensboro, freestones, oval in shape, of very bright color, resistant to brown rot, vigorous and productive, ripening at the season of Carman.—(2) A seedling of Belle × Early Crawford, ripening at the time of Champion, round in shape, freestone, a vigorous grower, having the flavor of Champion, but resistant to brown rot.—(3) Several seedlings of Belle × Early Crawford that resemble Belle in shape but have the color of Early Crawford, of good quality and ripening about the season of Belle.—(4) A seedling of Early Crawford × Elberta, resembling Elberta in shape and color but of superior quality, ripening about one week before Elberta.—The author lists the following general results: Elberta carries white flesh as a recessive character to the extent of about one-third. It seems

prepotent with respect to ripening period. Its character for quality is only mediocre.—Belle is strongly white, but seems to carry a 25-per cent character for yellow. It is prepotent with respect to vigor and quality and carries a character factor for clinginess of about 25 per cent. —Early Crawford is almost pure yellow. Its character for quality seems dominant as does its character for freestone.—Greensboro seems to be pure white, is clingstone, but carries small factor for freestone.—White on yellow gives increased vigor.—White seems to be dominant over pure yellow in the F^1 generation.—*E. C. Auchter.*

115. Crow, J. W. **Breeding methods with horticultural plants.** Proc. Amer. Soc. Hortic. Sci. 16: 19–24. (1919) 1920.—A plant-breeders' classification of plants is given. Attention is called to the fact that it is important to know whether a given plant produces seed by cross-pollination or self-pollination, and whether the reverse process is possible. The main principles of biological evolution as given are isolation of strains of heredity and recombination of characters by crossing. A discussion of each of these principles, with individual cases and examples, is given. A distinction between the words "selection" and "isolation" is discussed. Isolation consists in the segregation of a type or a line of heredity, which was there all the time and which is only brought to light through being segregated. "Selection," as used by Darwin, implies a gradual change of a cumulative nature in each successive generation. Although it is stated that in some cases it is impossible to say where isolation ceases and selection begins, still the author states, "It appears that isolation expresses the fundamental idea of most improvement work much better than does the word selection.—*E. C. Auchter.*

116. Dorsey, M. J. **Some characteristics of open-pollinated seedlings of the Malinda apple.** Proc. Amer. Soc. Hortic. Sci. 16: 36–42. (1919) 1920.—In the fall of 1907 a quantity of Malinda apples was obtained from an orchard in which were growing several other common varieties. The apples were open-pollinated. Seeds from these apples were removed and planted, and a total of 3879 seedlings were grown.—Up to the present report 49.1 per cent of this number (1903) had been removed as wild types or as stunted, and 20.8 per cent (808) had been discarded because of inferior fruit, while 30.1 per cent had been saved for further study.—Many of the seedlings came into fruit during the sixth year, although there was a variation in the time of first fruit production. About 300 seedlings have been selected on account of their promising fruit and now present a difficult task in the final weeding out. No two seedlings have borne fruit exactly alike, some are sweet, some are sour, some are large, some are small, some are quite hardy, while others are tender, and there is great variation in the markings of the different fruits.—In observing how hardy the 1168 seedlings were during the winter of 1917–1918, the following three things were outstanding: (1) 195 trees escaped all injury, (2) there was a greater injury generally to the trunk than to the main branches, (3) the extent of the injury to the trees in each row was fairly consistent. In comparing these results to Hibernal and Oldenburg, two of the hardy winter varieties in Minnesota, it was found that these varieties were generally hardy in the top, but the wood was often slightly brown in the trunk. *Pyrus baccata* was not injured, but such varieties as Grimes Golden, Delicious, Hubbardston, Winter Banana, etc., were all brown or dark brown in the wood, even in the smaller limbs.—*E. C. Auchter.*

117. Eaton, B. J. **Investigations in agricultural chemistry, 1918.** Agric. Bull. Federated Malay States 7: 224–227. 1919.—Results on the chemical examination of rubber samples, soils, and other special investigations in Malaya are given.

118. Galloway, B. T. **Tests of new pear stocks.** Nation. Nurseryman 28^5: 109–111. May, 1920.—Discusses the value of the following pear stocks for American use: *Pyrus Calleryana, P. usuriensis, P. serrulatas,* and *P. betualaefolia.*—*J. H. Gourley.*

119. Handover, W. P. **The dwarf coconut.** Agric. Bull. Federated Malay States 7: 295–297. 1919.—See also Bot. Absts. 6, Entry 113.

120. Hendrickson, A. H. **Inter-species pollination of plums.** Proc. Amer. Soc. Hortic. Sci. 16: 50–52. (1919) 1920.—Studies were made regarding the self fertility of the following varieties: Burbank (*P. triflora*), Reine Claude (*P. domestica*), German Prune (*P. domestica*) and Shropshire (*P. insititia*). The varieties were likewise inter-crossed with the following results as given in the author's summary.—(1) Burbank and German gave evidence of being self-sterile.—(2) Reine Claude and Shropshire gave evidence of being self-fertile.—(3) Burbank and Reine Claude are apparently inter-fertile.—(4) Reine Claude, German Prune and Shropshire are inter-fertile.—(5) From these data it is evident that, as far as the varieties tested are concerned there is no sterility existing between *P. triflora* and *P. domestica* or between *P. domestica* and *P. insititia.*—*E. C. Auchter.*

121. Jack, H. W. **Preliminary report on experiments with wet rice in Krian.** Agric. Bull. Federated Malay States 7: 298–319. *4 fig.* 1919.—Krian is the largest padi-growing district in Federated Malay States, about 50,000 acres being planted annually with wet rice. The experiments were made with a view to the improvement of yield of grain. Nearly 200 varieties were found but only six are used for the main crop. Introduced varieties, 8 Siamese, 9 Javanese, 14 Indian, were tried but did not equal the local strains. The cultivation of padi, hybridization, diseases, and pests, are treated at some length.—*T. F. Chipp.*

122. Kruckeberg, Henry W. **California Bud Selection Association standardizing nursery products.** Amer. Nurseryman 31: 100–101. May, 1920.—A general discussion is given of the individuality of fruit trees and the value of propagating from recorded trees. This movement is receiving considerable attention in California, by the prune growers and in the citrus-fruit regions.—*J. H. Gourley.*

123. Lamproy, E. **Les engrais radioactifs. [Radioactive fertilizers.]** Rev. Hortic. [Paris] 91: 393–394. Dec., 1919.—Experiments with this type of fertilizer were conducted on beans, wheat, spring vetch, white pea, flax, potato, beet, Jerusalem artichoke and sun-flower. The effects of the radioactive substances upon the cereals were more pronounced when they were combined with superphosphates, and the larger returns were generally obtained when they were used in connection with complete fertilizers. Approximately 50–60 kilos were applied to each hectare. The influence of the radioactive materials was especially noticeable upon plants producing tubers or thick roots, particularly regarding sugar content. These fertilizers are worthy of trial for use with specific horticultural crops.—*E. J. Kraus.*

124. Lewis, C. I., F. C. Reimer, and G. G. Brown. **Fertilizers for Oregon orchards.** Oregon Agric. Exp. Sta. Bull. 166. *48 p. Fig. 1–3.* 1920.—Fertilizer experiments on apple pear, and peach trees in southern Oregon indicated that the chief element needed is nitrogen, which, if immediate results are sought, may be applied in the form of nitrate of soda, nitrate of lime, or sulfate of ammonia at the rate of 6–10 pounds to each old apple or pear tree, and 3 pounds to each large peach tree. On some of the very heavy soils, which show a fair amount of nitrogen, it is not profitable to use mineral fertilizers at present. In the Hood River Valley it was shown, through a period of 5 years experimentation, that Newtown and Spitzenberg apple trees with low vigor due to depleted nitrogen supply failed to set fruit well and that there was a marked tendency toward alternate bearing. When available nitrogen was increased, however, through the use of either leguminous shade-crops, commercial fertilizers, or both in combination and generally supplemented by irrigation, the fruit set was increased, and in some cases the tendency toward alternate bearing was retarded. Because all orchard practices were not within control each year, conclusive evidence on the latter point was not obtainable. In the case of Spitzenberg apples, increased sizes and yields of fruit were offset at times by decreased quality and color, when very large amounts of nitrate of soda or sulfate of ammonia were used, especially in conjunction with leguminous shade-crops and irrigation. Applications of nitrate of soda to separate plots at intervals of two weeks, from March 6 to May 7, showed that "the early-fertilized Newtowns yielded 7.9, and the Spitzenbergs 10.83 loose boxes per tree, as compared to only 2.28 and 1.20 boxes for the latest application. With orchards on heavier soils, particularly, a system of management in which clover only is used

may be expected to keep up soil fertility without the use of nitrate fertilizers. There is need for correlating all orchard practices, such as tillage, irrigation, pruning and cover-cropping.—*E. J. Kraus.*

125. Lind, Gustaf. **Om förekomsten av vara viktigare skogsbär. [On the occurrence and distribution of our more important bush fruits.]** K. Landtbr. Akad. Handl. och Tidskr. 58: 175–177. 1919.

126. Lindley, Paul C. **Report of the Southern Nurserymen's Association.** Jour. Econ. Entomol. 13: 194–198. 1920.—A report presented to the Section of Horticultural Inspection at the thirty-second annual meeting of the Amer. Assoc. Econ. Entomol., January, 1920.—*A. B. Massey.*

127. Macoun, W. T., and M. B. Davis. **Progress in apple breeding for the Canadian prairies.** Proc. Amer. Soc. Hortic. Sci. 16: 13–18. (1919) 1920.—In 1887 seed of *Pyrus baccata* was obtained from the Imperial Botanic Gardens, Petrograd, Russia, and sown in Ottawa, Canada. In 1890 young trees from these seeds were sent to different Canadian experimental farms. These trees proved hardy, and, in 1894, 21 varieties of apples used as male parents were crossed on to these crab trees. The resulting fruit in the F_1 generation, while not much larger than that of the female parent, was of better quality. At the lower elevations, most of the crosses were quite hardy. Two of the crosses, named Columbia and Osman, were quite hardy in exposed and trying places.—In 1904 the best of the F_1 crosses were crossed with 18 different varieties of apples. This second infusion of apple "blood" increased the resulting size greatly, but still the fruit was not above the smallest marketable size for apples. Individual records and dimensions of fruit are given. When Pioneer, a seedling from the cross *P. baccata* × Tefofsky, was crossed with McIntosh, Northern Spy, Cranberry Pippin and Ontario, the male parents, especially McIntosh, exerted a marked influence on quality.—Breeding work will be continued, using *P. baccata* as the male parent and the Russian varieties as female parents, in the hope of getting hardier varieties that will withstand the severest tests on the Canadian prairies.—*E. C. Auchter.*

128. Marlatt, C. L. **Federal plant quarantine work and co-operation with state officials** Jour. Econ. Entomol. 13: 179–181. 1920.—Report presented to the Section of Horticultural Inspection at the thirty-second annual meeting of the Amer. Assoc. Econ. Entomol., January, 1920.—*A. B. Massey.*

129. Marshall, Roy E. **Report of three years' results in plum pollination in Oregon.** Proc. Amer. Soc. Hortic. Sci. 16: 42–49. (1919) 1920.—Several varieties of plums of different species were tested as to whether they were self-fruitful, self-fertile, self-sterile, or self-barren. Varieties of *Prunus domestica* were tested to see if these were inter-fruitful. Studies were also made to see whether varieties of *P. domestica* and *P. triflora* were inter-fruitful. The author's summary is as follows: (1) Pollen of the varieties of *Prunus domestica* and *P. triflora* seem to germinate best in a solution of 5 per cent cane sugar and 2 per cent gelatin.—(2) If there is a normal bloom and 1 flower in 20 matures into a fruit, the result may be a full crop in some cases, while in some others 1 in every 2 or 3 flowers should set to mature a full crop. Generally, 1 flower in 5 should set.—(3) Thirteen of the 23 varieties tested are evidently self-barren. Blue Damson is decidedly self-fruitful. Italian and Petite are partially self-fruitful. The other varieties should be considered virtually (commercially) self-barren.—(4) The varieties of *P. domestica* may be considered as inter-fruitful.—(5) Italian and Petite are each good pollenizers for practically all varieties of *P. domestica* tested.—(6) It is not necessary that one be particular as to which of the varieties of *P. domestica* commonly grown in the Pacific Northwest are planted together, provided they bloom at approximately the same time. Some varieties are commercially profitable where no pollenizers are used.—(7) In such varieties as Italian, Petite, Sugar and Golden Drop, the pericarp ceases development soon after the seed dies and the fruit soon falls.—(8) In such varieties as Bavay, Blue Damson, Giant, Green Gage, Pond, Quackenbos, Red Magnum Bonum, Tennant

and Tragedy, the fruit may mature regardless of complete seed development.—(9) For the varieties tested, there is no direct relation between the variety of pollen used and the ratio which exists between plump or well developed seeds and matured fruits. The ratio is fairly constant for the variety, regardless of the kind of pollen applied.—(10) There is evidently no relation existing between the degree of fruitfulness of reciprocal crosses.—(11) The results obtained indicate that the results are the same whether the varieties of a given species are closely related or non-related.—(12) The species of *P. domestica* and *P. triflora* may be considered inter-sterile for all practical purposes.—*E. C. Auchter.*

130. Mathieu, E. **The oil palm in the East.** Gardens' Bull. Straits Settlements 2: 217–230. *2 fig.* 1920.—A discussion on the cultivation of *Elaeis guineensis* in the East.—*T. F. Chipp.*

131. Milsum, J. N. **Fruit culture in Malaya.** Dept. Agric. Federated Malay States Bull. 29. *108 p., 33 pl.* 1919.—Describes what fruits can be grown and their treatment.—*T. F. Chipp.*

132. Newell, Wilmon, and Frank Stirling. **Statistics on citrus plantings in Florida.** Florida State Plant Bd. Quart. Bull. 3: 113–116. 1919.—The data were accumulated in connection with the work of eradicating citrus canker and represent complete and up-to-date information on the subject. The data show that the total acreage devoted to the citrus groves in the state is 160,397, of which 115,324 acres are of bearing age and 45,073 are non-bearing. A comparison is made with the acreage in California which shows that the latter state has only a little over 12,000 acres more of orange and grapefruit groves; to this should be added 48,000 acres of lemon plantings in California while the acreage devoted to lemons in Florida is negligible.—*C. D. Sherbakoff.*

133. Pirotta, R. **Osservazioni sul fiore dell'olivo.** [**Olive flowers.**] Atti R. Accad. Lincei [Roma] Rend. (Cl. Sci. Fis. Mat. e Nat.) 28^2: 1–9. 1919.—Examinations were made of flowers of the common olive (*Olea europaea* L.), which showed that the flowers might be divided into three classes: monoclinous, clearly staminiferous, and physiologically staminiferous. They may be on the same or different individuals. In this respect the olive behaves like the wild, closely related *Phillyrea*. The aspect of the trees with these different types of flowers is described.—*F. M. Blodgett.*

134. Sasscer, E. R. **Important foreign pests collected on imported nursery stock in 1919.** Jour. Econ. Entomol. 13: 181–184. 1920.—Paper presented to the Section of Horticultural Inspection at the thirty-second annual meeting of the Amer. Assoc. Econ. Entomol., January, 1920.—*A. B. Massey.*

135. Spring, F. G., and J. N. Milsum. **Food production in Malaya.** Dept. Agric. Federated Malay States Bull. 30. *112 p., 12 pl.* 1919.—The principles of cultivation of the different food crops of Malaya are considered from the point of view of increasing the food supply of the country.—*T. F. Chipp.*

136. Stark, Major Lloyd C. **French orchards and nurseries after the war.** Nation. Nurseryman 28^1: 6–8. Jan., 1920.—There are no large commercial orchards in France comparable to those in America, but a large amount of fruit is produced from the smaller orchards and fruit gardens. Grapes, on the other hand, are grown on a gigantic scale, being supported by the wine industry.—Apples and pears are usually dwarfs and they are pruned in cordons, espaliers, and in every conceivable design and fashion. In Normandy the best orchards are grown, and the land is best adapted to the apple.—Most orchards are grown in sod and the trees are pruned to a flat, umbrella-shaped head in most instances. No variety of apple seems to be generally grown in France, but each locality has its own favorite.—The pear industry is much more important there than in America and the blight gives little or no trouble. The Bartlett, grown under the name of "English William" is the most popular

variety.—The sections which produced the stocks on which American fruits were worked have been practically destroyed and it has resulted in a tremendous increase in cost of stocks in U. S. A., as great as from $5 or $6 to $50 and $60 per thousand for apple seedlings. The bearing orchards are also destroyed in many sections which were occupied by the enemy.—*J. H. Gourley.*

137. Whitten, J. C. **An investigation in transplanting.** Missouri Agric. Exp. Sta. Res. Bull. 33. *73 p.* [1919.] 1920.—Investigations covering a period of 10 years show that under Missouri conditions fall transplanting is to be preferred to spring transplanting in the case of many deciduous fruit trees and shrubs. This is due mainly to the fact that the fall transplanted trees generally form some new roots during the winter and consequently are in a position to begin growth in early spring; while spring transplanted trees must wait until the soil warms up sufficiently for root growth before they can become established. If the top starts to vegetate much before roots are formed the new shoots dry out and die. It is for this reason that there is frequently a comparatively heavy mortality on the part of spring-set trees. Late spring transplanting gives as good results as early spring transplanting, if the trees are dormant at the time of setting. Similarly, late fall transplanting gives results as good or better than those attending early fall transplanting. The formation of new roots by transplanted trees is dependent to a great extent upon proper soil temperature. In the case of the fall set trees new roots are formed first from the lowest roots of the transplanted tree because temperature is apt to be more favorable at those depths; in the case of spring-transplanted trees root formation first takes place nearer the surface. This suggests one danger from too deep setting in the spring. Some root formation takes place below the frost line throughout the winter. Trees that are "heeled in" during the winter may be held dormant for late transplanting by lifting from the ground and "heeling in" again, whenever their buds show signs of starting. The roots of deciduous fruit trees and shrubs are very tender to frost while they are out of the ground and great care should be exercised to prevent their freezing. The small, fibrous roots of ordinary deciduous fruit trees usually die when they are transplanted and it is better to prune them away than to attempt to save them.—*V. R. Gardner.*

138. Wiggans, C. C. **Some factors favoring or opposing fruitfulness in apples.** Missouri Agric. Exp. Sta. Res. Bull. 32. *60 p.* [1918.] 1920.—A study was made of the performance of individual spurs of a number of apple varieties to determine, if possible, the factors associated with productiveness and unproductiveness. The conclusion is reached that individual spur performance is not dependent mainly upon such external factors as soil or seasonal variation in moisture, but rather to conditions within the tree or even the spur itself. Some apple varieties form a group in which the individual spurs are capable of fruiting every year; other varieties form a group in which the individual spurs seem to lack this ability. The habit of alternate bearing possessed by certain varieties seems closely associated with this performance characteristic of the individual spur. The sap concentration of bearing spurs averaged somewhat higher than that of non-bearing spurs. Non-bearing spurs have more, but not larger, leaves than bearing spurs. Girdling increased sap density above, and decreased it below, the point of girdling, the greatest influence being found comparatively close to the point of injury. In pot cultures with soil and sand and using several varieties, nitrogen influenced wood growth and fruit bud formation, while no influence of either potash or phosphorus could be detected. Differences in the sap concentration of leaf and twig sap of trees growing under different tillage methods were comparatively small. Training trees to an extremely high head removes an unnecessary amount of vegetative growth, reduces the number of fruit spurs during the early life of the tree, and consequently delays the time when the tree comes into bearing.—*V. R. Gardner.*

139. Wolff, W. H. **Influence of the prevention of leaf blights on the growth of nursery cherries and pears.** Amer. Nurseryman 31[5]: 110. May, 1920.—Data are given showing that 57.3 per cent of cherry trees sprayed in the nursery with Bordeaux mixture were over 3 feet in height, while only 23.5 per cent of the unsprayed trees, used as check, attained a height of 3 feet. Similar results were secured with Bartlett pear trees.—*J. H. Gourley.*

140. Young, Floyd D. **Frost and the prevention of damage by it.** U. S. Dept. Agric. Farmers' Bull. 1096. *48 p., 24 fig.* 1920.

FLORICULTURE AND ORNAMENTAL HORTICULTURE

141. Anonymous. **Cotoneaster acutifolia.** Amer. Nurseryman 31^2: 35. February, 1920.

142. Anonymous. **Cotoneaster acutifolia.** Nation. Nurseryman 28^3: 53. March, 1920.

143. Anonymous. **Severe winter effect.** Amer. Nurseryman 31^6: 138. June, 1920.—It is stated that very great losses to ornamental plants of all kinds were experienced following the winter of 1919–20 in the environment of Philadelphia. It is estimated that the loss in that section alone is more than $1,000,000.—*J. H. Gourley.*

VEGETABLE CULTURE

144. Lundberg, Joh. Fr. **Svalöfs Koloni-Stensärt. [Svalöf's "Koloni-Stens" pea.]** Sver. Utsädesf. Tidskr. 30: 30–31. 1920.—Origin and description of a new variety of marrow pea of very high quality. It is a selection from the Stens pea, a high-quality but rather unproductive variety.—*E. G. Anderson.*

145. Mathieu, E. **Tuba root (Derris elliptica) as an insecticide.** Gardens' Bull. Straits Settlements 2: 192–197. 1920.—Results are recorded for employing a decoction or powder of tuba root as an insecticide in vegetable cultivation.—*T. F. Chipp.*

HORTICULTURE PRODUCTS

146. Dunbar, P. B., and H. A. Lepper. **Report on fruit products.** Jour. Assoc. Official Agric. Chem. 3: 402-409. 1920.—Malic and citric acid determinations.—*F. M. Schertz.*

147. Eaton, B. J. **Tung oil or Chinese wood oil and candlenut oil from Aleurites spp.** Agric. Bull. Federated Malay States 7: 162–165. 1919.—The chemical characteristics, extraction of oil, and prospects of cultivation of this crop in Malaya are considered.—*T. F. Chipp.*

148. Ravaz, L. **Le defoxage des producteurs directs. [Removal of the objectionable taste of imported wines.]** Ann. École Nation. Agric. Montpellier 17: 71-80. (July, 1918.) July, 1919.—Several methods are given by which imported wines, especially those from America, are rendered more palatable.—*F. F. Halma.*

MORPHOLOGY AND TAXONOMY OF BRYOPHYTES

Alexander W. Evans, *Editor*

149. Beals, A. T. **Tortula pagorum (Milde) DeNot., near Harper's Ferry, West Virginia.** Bryologist 23: 33–35. *Pl. 1, fig. 1.* 1920.—The article reports the second collection in America of a rare European moss, as well as the occurrence of *Fabronia octoblepharis* (Schleich.) Schwaegr. The plate and figure are from photomicrographs.—*E. B. Chamberlain.*

150. Börgesen, F., and C. Raunkiaer. **Mosses and lichens collected in the former Danish West Indies.** Dansk Bot. Ark. 2^9: *18 p.* 1918.—The mosses were determined by V. F. Brotherus and number 24 species, *Trichostomum perviride* Broth. being described as new. These added to the species listed by Mrs. Britton give a total of 38 species now known from the islands, 4 of which are endemic. The lichens were determined by E. Wainio and number 156 species, 59 of which were described as new in Wainio's "Addidamente ad Lichenographiam Antillarum illustrandam" (Ann. Acad. Sci. Fenn. 6. Helsingfors, 1915).—*A. Gundersen.*

151. Collins, E. J. **Sex segregation in the Bryophyta.** Jour. Genetics 8: 130–146. *Pl. 6, 5 fig.* 1919.—See Bot. Absts. 3, Entry 2103.

152. Corbière, L. **Deux mousses africaines également françaises.** [**Two African mosses occurring likewise in France.**] Rev. Bryologique 41: 99. 1914. [Issued in 1920.]—This is the conclusion of a paper already abstracted in part. (See Bot. Absts 5, Entry 619.) The discovery of *Fissidens Moureti* Corb. in the department of Var in southern France is announced. This species was discovered by Mouret in Morocco and has since been reported from both Madeira and Spain. It is interesting to note that Mouret was also the collector of the French specimens. As a probable ally of *F. Moureti*, the author mentions *F. Warnstorfii* Fleisch., a species based on specimens from the vicinity of Naples but since recorded from Portugal. [See also Bot. Absts. 6, Entry 158.]—*A. W. Evans.*

153. Familler, I. **Bemerkungen über bayerische Moose.** [**Notes on Bavarian mosses.**] Krypt. Forsch. Bayerische Bot. Ges. 3: 166–167. *1 fig.* 1918.—The author notes the occurrence, in the vicinity of Regensburg, of *Orthotrichum diaphanum*, forma *aquaticum* (Davies) Venturi, a moss new to Germany. The variable leaf-apices of this form are figured and commented upon, and three other mosses accompanying the *Orthotrichum* are listed. The paper gives also new Bavarian stations for *Tortula obtusifolia* Schleich. and *Plagiothecium Ruthei* Limpr. and corrects two previously published records, one for a moss and the other for a liverwort.—*A. W. Evans.*

154. Groves, James. **Sex-terms for plants.** Jour. Botany 58: 55–56. 1920.—See Bot. Absts. 5, Entry 560.

155. Holzinger, John M. **Bartramiopsis Lescurii.** Bryologist 23: 35–36. 1920.—Kindberg, in founding the genus *Bartramiopsis* for *Atrichum Lescurii* James, misquoted James and apparently made the description from other than typical material. The genus should be maintained, but the authority for the combination given above is Cardot & Thériot. *B. sitkana* Kindb. is only a synonym.—*E. B. Chamberlain.*

156. Luisier, A. **Les mousses de Madère.** [**Mosses of Madeira.**] Broteria, Ser. Bot. 18: 5–22. 1920.—This is the seventh of a series of articles containing a complete discussion of the moss flora of Madeira, and includes the genera *Thamnium* to *Plagiothecium* (in part). No new forms are described, but extended discussion and critical notes are given upon *Thamnium canariense* R. & C., *Lepidopilum fontanum* Mitt., *L. virens* Card., *Amblystegium madeirense* Mitt., *Campylium serratum* Card. & Wint., *Gollania Berthelotiana* (Mont.) Broth., and *Stereodon canariensis* Mitt. In most of these cases there are copious quotations from original or out-of-the-way sources. [See Bot. Absts. 1, Entry 757; 3, Entries 2477 and 2478; and 5, Entry 625.]—*E. B. Chamberlain.*

157. Mola, Pasquale. **Flora delle acque Sarde. Contributo delle piante idrofite ed igrofite della Sardegna.** [**Flora of the Sardinian waters. Hydrophytes and Hygrophytes of Sardinia.**] Atti R. Accad. Sci. Torino 54: 478–502. 1918–1919.—See Bot. Absts. 4, Entry 1025.

158. Potier de la Varde, R. **Observations sur quelques espèces du genre Fissidens.** [**Observations on certain species of the genus Fissidens.**] Rev. Bryologique 41: 94–98. *Pl. 2.* 1914. [Issued in 1920.]—The first part of this paper has already been abstracted. (See Bot. Absts. 5, Entry 628.) In this second and concluding part, the discussion of *F. tamarindifolius* is continued, certain specimens from Brittany being especially considered. These are referred to *F. impar*, as var. *Camusi* var. nov., and several distinct forms of this variety are described and figured. According to the author's summary *F. tamarindifolius*, as understood by writers, is not a definite species but includes forms and varieties of *F. incurvus* Starke, *F. inconstans* Schimp. and *F. impar* Mitt. At the close of the paper the status of *F. gracilis* (La Pyl). Brid. is discussed, and the conclusion is reached that it represents a slender and delicate variety of *F. incurvus*. It was discovered in 1814 by La Pylie at Fougères, France, and has not been collected since. [See also Bot. Absts. 6, Entry 152.]—*A. W. Evans.*

159. Taylor, A. Mosses as formers of tufa and floating islands. Bryologist 22: 38–39. 1919.—See Bot. Absts. 4, Entry 306.

160. Thériot, I. Notes bryologiques. I. Syrrhopodon Taylori Schwaegr. Bull. Soc. Bot. Genève 11: 24–28. 1919.—The original description of *Syrrhopodon Taylori* Schwaegr. is erroneous as to the peristome. An examination of the type specimen leaves no doubt concerning the identity of the plant, which is a species of *Leucoloma*, according to the description of this genus by Mitten, and the species in question is properly named *Leucoloma Taylori* (Schwaegr.) Mitt. *Leucoloma sarcotrichum* C. Müll. is synonymous.—*W. H. Emig.*

161. Thériot, I. Notes bryologiques. II. Fabronia longidens Duby. Bull. Soc. Bot. Genève 11: 28–29. 1919.—The moss described by Duby, in 1867, as *Fabronia longidens* is *Dimerodontium pellucidum* (Hook.) Mitt. The specific name *pellucidum* is misleading, for the color of the moss is dull green like that of the species of *Leskea.*—*W. H. Emig.*

162. Twiss, W. C. A study of the plastids and mitochondria in Preissia and corn. Amer. Jour. Bot. 6: 217–234. *Pl. 33–34.* 1919.—See Bot. Absts. 3, Entry 1942.

MORPHOLOGY AND TAXONOMY OF FUNGI, LICHENS, BACTERIA AND MYXOMYCETES

H. M. Fitzpatrick, *Editor*

MYXOMYCETES

163. Lister, G. The Mycetozoa, a short history of their study in Britain, an account of their habitats generally, and a list of species recorded from Essex. *4 + 54 p.* The Essex Field Club, Stratford; Simpkin, Marshall & Co., Ltd.: London, 1918. [Essex Field Club Special Memoirs, Vol. 6.]

BACTERIA

164. Atkins, Kenneth N. A modification of the Gram stain. [Abstract.] Absts. Bact. 4: 4. 1920.—"A stable staining solution consists of a 1 per cent aqueous solution aniline sulphate, 3 parts; saturated alcoholic solution Gentian violet, 1 part. The iodine solution contains 2 grams iodine, 10 cc. normal sodium hydroxide solution, water 90 cc. Time for staining and treatment with modified iodine solution, 1 minute each." [Author's abst. of paper read before Soc. Amer. Bact.]

165. Bronfenbrenner, J. Some improvements in the methods for the identification of bacteria. [Abstract.] Absts. Bact. 3: 6. 1919.—Endo agar as a stock medium is unsatisfactory because of instability of color. By substituting a "proper mixture" of rosolic acid and China blue for the sodium sulphite-fuchsin mixture, as an indicator in lactose agar, a better medium is secured. The agar is practically colorless. Organisms which ferment lactose are promptly indicated by intense blue color of the colony, those which do not, remain colorless or pink. For isolation, buffer is adjusted to permit earliest possible detection.—Identification by means of carbohydrate fermentation tests is hastened by use of "micro-plates." Single drops of the media to be tested are placed in a single Petri dish at points previously touched with a needle bearing the organism to be tested. The method is also useful in testing for gelatin liquefaction, starch hydrolysis, hydrogen-sulfid formation, reduction of nitrates, etc. [From author's absts. of paper read at scientific session, Soc. Amer. Bact.]—*D. Reddick.*

166. Bronfenbrenner, J., M. J. Schlesinger, and D. Soletsky. Study in China-blue-rosolic-acid indicator. [Abstract.] Absts. Bact. 4: 12. 1920.

167. Browne, William W. **The isolation of bacteria from salt and salted foods.** [Abstract.] Absts. Bact. 4: 11–12. 1920.—Reddening of salted fish is due to growth of 2 organisms, a spirochete producing an opaque pink coloration and a bacillus producing a transparent red coloration. They are intimately associated and are difficult to separate in pure culture. No growth occurs on media containing less than 16 per cent sea salt; optimum concentration seems to be saturation; optimum temperature, 50° to 55°C. Both are strictly aerobic, both difficult to stain, and neither affected by sunlight (8 hours). Morphology of both organisms depends on concentration of salt, the largest forms (14μ) appearing on saturated solutions and the shortest (2μ) on media of 18-per-cent concentration.—[From author's abst. of paper read at scientific session, Soc. Amer. Bact.]—*D. Reddick.*

168. Conn, H. J. **Report of Committee on Descriptive Chart.** [Abstract.] Absts. Bact. 4: 1. 1920.—The report is to be published in full in *Jour. Bact.*

169. Davison, Wilburt C. **The aerobic flora of dysentery stools in adults and children.** [Abstract.] Absts. Bact. 4: 15. 1920.

170. Downs, Cornelia Mitchell. **Typing of Bacillus typhosus.** [Abstract.] Absts. Bact. 4: 19. 1920.—"In the course of routine diagnostic work it was observed that some of the sera used for identifying typhoid failed to agglutinate certain strains. This fact seemed to indicate that there might be types of typhoid bacilli. The strains used were from as widely separates sources as possible; 5 were isolated in Kansas, 4 from Europe, 1 from California, the others from various parts of the East and middle West. Culturally they were identical, with the exception of 3 strains, which gave a deep blue color to litmus milk after a slight initial acidity lasting 4 days; the others remained pink.—Representative strains were selected and rabbits immunized. Cross agglutinations were made using all the organisms against each serum. It was found that they readily fell into 4 groups. Groups I, II, and III are quite distinct, while group IV is agglutinated by both type I and II sera."—[Author's abst. of paper read before Soc. Amer. Bact.]

171. Eaton, Paul. **A device for the rapid measurement of bacteria.** [Abstract.] Absts. Bact. 4: 4. 1920.—A mechanical stage the movement of which is brought about by the use of a screw and nut, the screw being actuated by a rather large worm-wheel. The mechanical motions which bring about movement of stage are recorded by a counter of the "mile-register" type. [From author's absts. of paper read before Soc. Amer. Bact.]—*D. Reddick.*

172. Elliott, Charlotte. **Halo-blight of oats.** Jour. Agric. Res. 19: 139–172. *Pl. C (col.) and 26–35.* 1920.—See Bot. Absts. 6, Entry 230.

173. Hall, Ivan C. **Methylene blue as a criterion of anaerobiosis.** [Abstract.] Absts. Bact. 4: 4. 1920.

174. Jones, D. H. **Continued studies of some azotobacters.** [Abstract.] Absts. Bact. 4: 6. 1920.—Four varieties of *Azotobacter* isolated from soil have been studied and are found to have a very complex life cycle with extreme polymorphism. The various forms encountered are briefly enumerated. [From author's abst. of paper read before Soc. Amer. Bact.]—*D. Reddick.*

175. Levine, Max. **Some differential characters of the group of dysentery bacilli.** [Abstract.] Absts. Bact. 4: 15. 1920.—Six species are recognized: *Bact. dysenteriae* (Shiga-Kruse), *Bact. ambiguum*, *Bact. flexneri*, *Bact. sonnei*, *Bact. dispar*, and *Bact. alkalescens*. The interrelationships and cultural differential characters are indicated in a table. [From author's abst. of paper read before Soc. Amer. Bact.]—*D. Reddick.*

176. MacInnes, L. R., and H. H. Randell. **Dairy produce factory premises and manufacturing processes. The application of scientific methods to their examination.** Agric. Gaz. New South Wales 31: 333–337. *8 fig.* 1920.

177. MONFORT, W. F., AND M. C. PERRY. **Some atypical colon-aerogenes forms isolated from natural waters.** [Abstract.] Absts. Bact. 4: 8. 1920.—"The purpose of sanitary bacteriology of water supplies is distinct from that of systematic bacteriology. Variations from types now accepted as indicative of fecal pollution are so manifold that further study of these variants prior to complete rejuvenation is essential to their correlation with known pollution.—The attempt to reduce the members of the colon-aerogenes group to 4 types (non-fecal and fecal aerogenes, cloacae, and fecal *B. coli*) is futile so far as practical application in judging water supplies is concerned.—There are intermediate forms, of varying methyl-red reaction, furnishing transitions from one to the other type, which may correlate with their late environment."—Some of the variations are stated and experimental data on technique are summarized. [From author's abst. of paper read before Soc. Amer. Bact.]—*D. Reddick.*

178. NEILL, JAMES, AND ARAO ITANO. **A microscopical method for anaerobic cultivation.** [Abstract.] Absts. Bact. 4: 4. 1920.—An hermetic cell, similar to the VAN TIEGHEM cell, is used, oxygen being removed by use of alkaline pyrogallic acid. [From authors' abst. of paper read before Soc. Amer. Bact.]—*D. Reddick.*

179. NORMINGTON, RUTH. **Studies in the heat resistant organisms of cold packed canned peas.** Michigan Agric. Exp. Sta. Tech. Bull. 47: 1–33. 1919.—Discusses the bacteria found in canned peas, describing the cultural characters of nine or more species isolated and studied. These are spore producers and capable of withstanding high temperatures.—*E. A. Bessey.*

180. ORR, PAUL F. **Some observations on the biological characteristics of Bacillus botulinus and its toxins.** [Abstract.] Absts. Bact. 4: 10. 1920.—Many of the characteristics exhibited by 16 strains of *B. botulinus* that have been studied differ materially from the accepted description of this organism.—The optimum temperature for growth of all of the strains has invariably been found to be about 37°C. At this temperature an abundant growth takes place within 16 hours and spore formation usually begins within 36 hours; however, the spore formation varies with different strains. When grown in the ordinary dextrose media, such as agar, gelatin and bouillon, *B. botulinus* produces acid, spores are not formed and consequently the cultures soon lose their vitality. In the sugar free media, spores are readily formed and the cultures have remained viable at 37°C. for a period of 2 years.—Of the 16 strains studied originally 11 produced toxin. During the course of a year of cultivation one has entirely lost its ability to produce toxin. Toxin is readily formed at 37°C. by all of the toxic strains, and can be demonstrated after 20 hours of growth.—This toxin is destroyed at 80°C. within 2 minutes. The temperature coefficient of the destruction of the toxin by heat was found to lie between 6 and 8.5 for a rise of 10°C.—[From author's abst. of paper read before Soc. Amer. Bact.]—*D. Reddick.*

181. RIVERS, T. M. **What is an influenza bacillus?** [Abstract.] Absts. Bact. 4: 14. 1920.—"The question asked in the title can be answered in one sentence. There is only one true *B. influenzae*, existing in name only, and that is the first one grown and described by PFEIFFER, as neither he nor any one else has ever shown any of the subsequent strains to be the same as the first. He did, however, draw the attention of bacteriologists to a group of hemoglobinophilic bacilli, which has caused many contentions and hard feelings and about which no more is known now than nearly thirty years ago."—"The Gram-negative, non-motile hemoglobinophilic bacilli can be classified biologically by reactions which admit of subdivisions of the group."—[From author's abst. of paper read before Soc. Amer. Bact.]—*D. Reddick.*

182. TREECE, E. L. **A substitute for adonite in the determination of fecal and non-fecal strains of the colon-aerogenes group.** [Abstract.] Absts. Bact. 4: 9. 1920.—"A peptone gelatine as follows: 12 per cent gelatine, 2 per cent peptone, 0.5 per cent meat extract, tubed and sterilized as for ordinary gelatine was found to correlate the fermentation of adonite in determining fecal and non-fecal strains of the colon-aerogenes group; positive results being

indicated by a line of from 4 to 8 bubbles extending down the line of inoculation within 48 hours at 20°C.—Of 60 food strains studied 32 were of the aerogenes type and 20 of these (or 62.5 per cent) were positive in adonite and the same number, 62.5 per cent, produced gas in peptone gelatine. Of the 17 strains of aerogenes that were Voges-Proskauer positive, 82.3 per cent were adonite fermenters and 88.2 per cent gave gas in peptone gelatine. Of 37 known fecal strains studied 36 were negative in adonite and 36 did not produce gas on peptone gelatine."—[Author's abst. of paper read before Soc. Amer. Bact.]

183. W[inslow], C.-E. A. **The lactic acid bacteria.** [Rev. of: Orla-Jensen, S. **The lactic acid bacteria.** Mem. Acad. R. Sci. et Let. Danemark (Sect. Sci.) **VIII, 5**: 81–196. *51 pl.* 1919.] Absts. Bact. **4**: 102. 1920.—"The bio-chemical portion of this monograph represents a contribution of the highest value to our knowledge of the physiology of a puzzling bacterial complex. From a systematic standpoint it is less illuminating. The evidence for combining the streptococci and the Bulgarian bacillus group in one family is suggestive, but hardly conclusive; while as in previous communications Jensen appears entirely innocent of any knowledge of the principles of biological nomenclature or of any respect for the work of previous investigators. His genus *Betacoccus* is apparently *Leuconostoc* of van Tieghem, and his *Thermobacterium* is certainly *Lactobacillus* Beijerinck; while many of his specific names are merely confusing synonyms of perfectly valid names given by previous investigators."—*D. Reddick.*

184. Winslow, C.-E. A., *Chairman*, Jean Broadhurst, R. E. Buchanan, Charles Krumwiede, Jr., L. A. Rogers, and G. H. Smith. **Abstract of final report of the committee on characterization and classification of bacterial types.** [Abstract.] Absts. Bact. **4**: 1. 1920.—"As a result of criticisms of the preliminary report of the committee (Jour. Bact. **2**: 505) made at, and subsequent to, the 1917 meeting of the Society, the committee presented a revised classification of the families and genera of the Actinomycetales and Eubacteriales, 38 genera being finally included, with type species for each. In addition to the classification itself the committee presented an artificial key to the families and genera recognized, and a generic index of the commoner species of bacteria with the names ordinarily used referred to their proper genera under the proposed classification. The committee recommended that the following names be adopted by the Society as approved genera:

Acetobacter Fuhrmann
Actinomyces Harz
Bacillus Cohn
Bacterium Ehrenberg
Chromobacterium Bergonzini
Clostridium Prazmowski
Erythrobacillus Fortineau
Leptoteichia Trevisan
Leuconostoc Van Tieghan
Micrococcus Cohn
Rhizobium Frank
Sarcina Goodsir
Spirillum Ehrenberg
Staphylococcus Rosenbach
Streptococcus Rosenbach
Vibrio Mueller

and that The Committee on Characterization and Classification of Bacterial Types be discharged and that a new committee on Bacterial Taxonomy be appointed (1) to study and report to the Society from time to time in regard to problems of nomenclature, including such revisions of the nomenclature in the present report as may seem necessary; and (2) to take the proper steps to secure action at the next International Botanical Congress leading to the general ends contemplated in the 1916 recommendations of the Society.—(a) That French, English and German may be substituted for Latin in the diagnosis of bacterial species. (b) That the date of publication of the third edition of Zoph's Spaltpilze (1883) be considered the beginning of bacterial nomenclature for the purpose of determining priority, with the exception of a definite list of genera conservanda. (c) That such of the approved generic names specified above as may be found to require such action be recognized as genera conservanda in bacterial taxonomy.—Both the recommendations of the Committee were adopted by the Society."—[Abst. by C.-E. A. Winslow of report made to Soc. Amer. Bact.]

LICHENS

185. Herre, Albert C. **Alaskan notes.** Bryologist 23: 37–38. 1920.—A list of twenty-eight species of lichens from Alaska, with localities.—*E. B. Chamberlain.*

186. Steiner, J. **Flechten aus Transkaukasien.** [Lichens from Transcaucasia.] Ann. Mycol. 17: 1–32. 1919.—The author gives a list of some two hundred lichens which he received from G. Woronoff for identification. The following new species and varieties are listed: *Dermatocarpon* (*Endopyrenium rufescens* (Ach.) Th. Fr. var. *pruinatum* Stnr.; *Leptorhaphis Buxi* Stnr.; *Lithographa deplanata* Stnr.; *Lecidea* (*Eulecidea*) *goniophiliza* Stnr.; *Lecidea* (*Eulecidea*) *phaea* (Flot. apud Krb.) Nyl. f. *interrupta* Stnr. nov. f.; *Lecanora* (*Aspicilia*) *sphaerothallina* Stnr. var. *plicatula* Stnr.; *Lecanora* (*Aspicilia*) *esculenta* (Pall.) Eversm. var. *Erivanensis* Sntr.; *Lecanora* (*Aspicilia*) *subdepressa* Nyl. var. *adgrediens* Stnr.; *Lecanora* (*Aspicilia*) *squamulosa* Stnr.; *Lecanora* (*Aspicilia*) *epiglypta* Nyl. var. *rupta* Stnr.; *Lecanora solorinoides* Stnr.; *Parmelia* (*Cyclocheilae*) *glabra* (Schaer.) Nyl. var. *epilosa* Stnr.; *Caloplaca irrubescens* (Nyl.) A. Zahlbr. var. *disjecta* Stnr.; *Physcia caucasica* Stnr.; *Buellia Zahlbruckneri* Stnr. var. *microspora* Stnr.—*Fred C. Werkenthin.*

FUNGI

187. Arnaud, G. **La famille des Parodiellinacées (Pyrénomycètes).** [**The family Parodiellinaceae of the Pyrenomycetes.**] Compt. Rend. Acad. Sci. Paris 170: 202–204. 1920.—In harmony with his previous study the author seeks to establish the family Parodiellinaceae in the order Hypocreales. This family is to consist of four tribes organized about the genera *Bagnisiopsis*, *Parodiellina*, *Parodiopsis*, and *Erysiphe*, the last named to constitute the nucleus of the tribe, which is equivalent to the well established group, the Erysiphaceae. The family is held to possess unity due to the parasitic habit of its members upon vascular plants, especially their leaves. There are present internal haustoria, and a pigment occurs at least in the conceptacles. Conidiophores are common in the family. Two tribes have external mycelia, its presence seeming to have no definite relation to development in a rainy region as is the case in the Microthyriaceae. The Erysipheae represent the climax of evolution in this group, the simplicity of their conceptacles being apparently the result of reduction on the part of the stroma.—*C. H. and W. K. Farr.*

188. Bardie, A. **Excursion mycologique de la Société Linnéenne è Léognan le 12 Novembre 1916, nos vieilles forêts; nécessité de leur conservation.** [**The mycological excursion of the Linnean Society to Léognan, November 12, 1916.**] Actes Soc. Linneenne Bordeaux (Proces-verbaux) 69: 105–113. 1915–16. [Received May, 1920.]—See Bot. Absts. 6, Entry 80.

189. Bose, S. R. **Fungi of Bengal. III. Polyporaceae of Bengal.** Carmichael Med. Coll. Belgachia Bull. 1. *5 p., 12 pl.* 1920.—Twelve species of polypores are described and each is illustrated with 3 or more halftones. The 12 illustrations are arranged on 7 special inserted sheets. The specimens have been compared with authentic material in the herbarium of the Peradenya Bot. Gard., Ceylon. The species are: *Fomes applanatus*, *F. pallidus*, *Lenzites repanda*, *Polyporus licnoides*, *P. emerici*, *P. secernibilis*, *P. zonalis*, *Poria diversiporus*, *Trametes lactinea*, *T. versatilis*, *T. occidentalis*, *T. persooni*. [Part I was published in: Proc. Indian Assoc. Cultiv. Sci. 4: part 4, 1918. Part II appeared in the Proceedings of the Science Convention, 1918, of the same Association.]—*D. Reddick.*

190. Boyer, G. **Sur l'existence et les principaux caractères du mycélium des champignons qui paraissent en être dépourvus et en particulier de celui des tubéracées.** [**Concerning the existence and the principal characters of the mycelium of fungi which appear to be sterile and in particular those of the Tuberaceae.**] Actes Soc. Linn. Bordeaux (Proces-verbaux) 69: 94–97. 1915–16.—The delicate mycelium of many species of *Amanita* and *Boletus*, if followed for a distance of one to several decimeters, leads to mycorhiza of tree roots. Many of the truffles and similar fungi with mycelium that is scarcely apparent possess mycelium which extends into the earth and in many cases probably connect with the mycorhiza of the neighboring trees.—*W. H. Emig.*

191. Burt, E. A. **The Thelephoraceae of North America. XI. Tulasnella, Veluticeps, Mycobonia, Epithele, and Lachnocladium.** Ann. Missouri Bot. Gard. 6: 253-280. *Pl. 5, fig. 1-15.* 1919.—In the monograph of these 5 genera two species, *Epithele sulphurea* and *Lachnocladium erectum* are described as new. *Aleurodiscus tabacinus* Cooke is newly combined as *Veluticeps tabacina* (Cooke) Burt and *Clavaria bicolor* Peck as *Lachnocladium bicolor* (Peck) Burt. *Pterula setosa* Peck is excluded from *Lachnocladium* to which it had been transferred by Saccardo.—*S. M. Zeller.*

192. Chaborski, Gabriela. **Recherches sur les levures thermophile et cryophiles. [Studies on thermophile and cryophile yeasts.]** Bull. Soc. Bot. Genève 11: 70-116. *1 pl., 32 fig.* 1919.—Yeasts were obtained from fig and banana fruits and from palm and birch sap. From the fig two new species of yeasts were isolated: *Zygosaccharomyces ficicola* Chaborsky n. sp. and *Torula botryoidea* Chaborski n. sp. From the banana a species representing a new genus of fungi was obtained: *Asporomyces asporus* Chaborski n. sp. From the sugar of *Arenga saccharifera* and the birch tree many cultures of undetermined *Mycoderma* were isolated.—*W. H. Emig.*

193. Chipp, T. F. **Echinodia theobromae Pat.** Gardens' Bull. Straits Settlements 2: 199. 1920.—More mature specimens of this new species confirm the opinion that it is a stilboid form of a polypore.—*T. F. Chipp.*

194. Dietel, P. **Über Puccinia obscura Schröt. und einige verwandte Puccinien auf Luzula. [Puccinia obscura Schröt. and related Pucciniae on Luzula.]** Ann. Mycol. 17: 48–58. 1919.—According to an investigation made by the author the urediniospores found on *Luzula maxima* and those of *Puccinia obscura* Schröt. differ considerably in size. Based on measurements of 200 spores each, it was found that the urediniospores of *Puccinia obscura* are 22–25 x18–20μ, while those found on *Luzula maxima* measure 23–40x17–29μ. The author regards the fungus on this host as distinct, names it *Puccinia Luzulae maximae* Diet., and gives a detailed description. The teliospores are capable of germinating the year in which they are formed. The author also gives a description of a rust found on *Luzula Alopecurus* by A. Philippi, and names it *Puccinia luzulina* Syd. n. sp.—*Fred C. Werkenthin.*

195. Doidge, Ethel M. **South African Perisporiaceae. III. Notes on four species of Meliola hitherto unrecorded from South Africa.** Trans. Roy. Soc. South Africa 8: 107–110. *Pl. 4.* 1920.—Four species of *Meliola* hitherto unrecorded from South Africa, namely *Meliola malacotricha* Speg., *M. palmicola* Wint., *M. bicornis* Wint., and a variety of *M. geniculata* Syd. & Butl., have been identified in collections made in Natal and in the eastern part of the Cape Province, and are here described. [See also next following Entries, 196 and 197.]—*E. M. Doidge.*

196. Doidge, Ethel M. **South African Perisporiaceae. IV. New species from the Coast Districts.** Trans. Roy. Soc. South Africa 8: 111–115. *Pl. 5-6.* 1920.—This paper consists of descriptions and illustrations of 9 new species, 6 of which belong to the genus *Meliola.* [See also next preceding and next following Entries, 195 and 197.]—*E. M. Doidge.*

197. Doidge, Ethel M. **South African Perisporaceae. V. Notes on an interesting collection from Natal.** Trans. Roy. Soc. South Africa 8: 137–143. *Pl. 7-8.* 1920.—Eight new species are described and a number of species previously described are recorded on hitherto unreported hosts. [See also next preceding Entries, 195 and 196.]—*E. M. Doidge.*

198. Doidge, Ethel M. **Mycological notes I.** Trans. Roy. Soc. South Africa 8: 117–119. 1920.—The distribution of *Asterodothis solaris* and its occurrence on a number of different hosts are recorded. *Spegazzinia Meliolae* Zimm., *Phaeosphaerelle senniana* Sacc. and *Isariopsis griseola* Sacc. are recorded as occurring in South Africa and two new species, *Dothidasteromella contorta* and *Gloniella multiseptata* are described.—*E. M. Doidge.*

199. DOIDGE, ETHEL M. **Meliolaster, a new genus of the Microthyriaceae.** Trans. Roy. Soc. South Africa 8: 121–123. 1920.—This is a genus resembling *Meliola* in its mycelium and spores, and *Asterina* in the form of its thyriothecium.—*E. M. Doidge.*

200. MATSUMOTO, T. **Culture experiments with Melampsora in Japan.** Ann. Missouri Bot. Gard. 6: 309–316. *Fig. 1–3.* 1919.—Cross inoculations of teliospores of a *Melampsora* from *Salix Urbaniana* on *Larix decidua* and caeomaspores from *L. decidua* on *S. Urbaniana* were successful. *Melampsora Larici-Urbaniana* is described as new. *M. Larici-populina* Kleb. is found in Japan on *Populus balsamifera.* A species on *Salix babylonica,* having a caeoma stage on the leaves of *Chelidonium majus,* has not been definitely placed taxonomically, while a *Melampsora* on *Salix Capraea* seems to have a caeoma stage on the leaves of neither *Larix* nor *Abies.*—*S. M. Zeller.*

201. MATTIROLO, O. **La Daldinia concentrica nella Torbiera di Montorfano.** [**Daldinia concentrica in a peat bog at Montorfano.**] Nuovo Gior. Bot. Ital. 26: 142-146. 1919.—The fruit body of this fungus was found in the bog of Montorfano and was first taken for a fruit of the horse-chestnut. The walls of the hyphal strands had become impregnated with graphic acid and were in a perfect state of preservation.—*E. Artschwager.*

202. PEGLION, VITTORIO. **La forma ascofora (Microsphaera quercina) dell'oidio della quercia nel Bolognese.** [**Perithecial form of the oak mildew.**] Atti R. Accad. Lincei [Roma] Rend. (Cl. Sci. Fis. Mat. e Nat.) 28²: 197–198. 1919.—The perithecial stage of *Oidium quercinum* Thüm., on oak and cerris was collected near Bologna and found to be *Microsphaera quercina* (Schw.) Burr.—*F. M. Blodgett.*

203. PUTTERILL, V. A. **A new apple tree canker.** South African Jour. Sci. 16: 256–271. *Pl. 21–30, 6 fig.* 1919.—See Bot. Absts. 6, Entry 251.

204. RICK, J. **Contributio ad monographiam agaricacearum brasiliensium.** [**Contribution towards a monograph of Brazilian agarics.**] Broteria (Ser. Bot.) 18: 48. 1920.—This is the first page only of an article to be continued in the next issue. *Lepiota albo-squamosa* and *L. Hypholoma* are described as new.—*E. B. Chamberlain.*

205. RODWAY, L. **Notes and additions to the fungus flora of Tasmania.** Papers Proc. Roy. Soc. Tasmania 1919: 110–116. 1920.—The following new species are described: *Hydnangium microsporium, H. densum, Hysterangium atratum, H. obtusum, Secotium ochraceum, Orbilia crystalina, Spragueola mucida, Paurocotylis niveus, Sphaerosoma tasmanica, Dendrodochium molle.*—*J. H. Faull.*

206. SYDOW, H., AND P. SYDOW. **Mykologische Mitteilungen.** [**Mycological announcements.**] Ann. Mycol. 17: 33–47. *2 fig.* 1919.—The following new species and new genera of fungi are listed: *Septobasidium sulphurellum* Syd.; *Puccinia Tetranthi* Syd.; *Puccinia Hallosciadis* Syd.; *Puccinia Paulsenii* Syd.; *Peridermium praelongum* Syd.; *Peridermium japonicum* Syd.; *Phaeodimeriella curviseta* Syd.; *Asterina diaphorella* Syd.; *Titanella* Syd.; *Titanella luzonensis* (P. Henn.) Syd.; previously described as *Julella luzonensis* P. Henn.; *Titanella illicina* (Syd. et Butl.) Syd. previously described as *Pleomassaria ilicina* Syd. et Butl.; *Titanella grandis* Syd. previously named *Pleomassaria grandis* Syd.; and *Titanella intermedia* Syd. previously called *Julella intermedia* Syd.; *Starbaeckiella* Syd.; *Starbaeckiella massariospora* (Starb.) Syd. = (*Clypeosphaeria? massariospora* Starb.); *Starbaeckiella Mangiferae* Syd. = (*Reseliinia Mangiferae* Syd.); *Starbaeckiella Elmeri* Syd. = (*Anthostomella Elmeri* Syd.); *Starbaeckiella Bakeriana* (Rehm) Syd. = (*Clypeosphaeria Bakeriana* Rehm); *Starbaeckiella Palaquii* (Ricker) Syd. = (*Trematosphaeria Palaquii* Ricker); *Microscypha* Syd.; *Microscypha grisella* (Rehm) Syd. (*Helotium grisellum* Rehm); *Xenopeltis* Syd.; *Xenopeltis philippinensis* Syd. illustrated with two figures in the text.—The author adds to this list the names of seven genera which had to be renamed as follows: *Linostoma* v. Hoehn to *Ophiostoma* Syd.; *Apio-*

sporella Speg. to *Apiocarpella* Syd.; *Kriegeria* Bres. to *Xenogloea* Syd.; *Willia* E. Chr. Hansen to *Hansenula* Syd.; *Venturiella* Speg. to *Neoventuria* Syd.; *Chaetopeltis* Sacc. to *Tassia* Syd.; and *Arthrobotryum* Rostr. to *Gonyella* Syd.—*Fred C. Werkenthin.*

207. Thom, Charles, and Margaret B. Church. **The identity of Aspergillus oryzae.** [Abstract.] Absts. Bact. 4: 3. 1920.—*Aspergillus oryzae* Ahlburg was described as the yellow-green mold used in the sake industry of the Orient. As identified by the description of Wehmer, it is a species with fairly sharp limits. The Japanese, however, use the same name for the organism or organisms concerned in the fermentation of soy sauce or shoyu and related industries. Our collection includes many hundreds of yellow-green strains belonging to this group, ranging from the culture of *A. oryzae* distributed by Wehmer to authentic cultures used in the shoyu fermentation and cultures representing *A. flavus* as interpreted by Brefeld. The Japanese workers have clearly used the name *A. oryzae* in their factories and in their experimental work as covering this entire group, although they recognize that the various members of the group are very different in their appearance and physiological activity. Certain common characters link this series into a natural group. All show the same markings of stalk wall and conidial wall. All show the same general arrangement of fruiting parts. All show a particular yellow coloring matter which is more or less supplemented throughout the group with a true green. Pronounced differences are found in colony appearance, in shades of color, in measurements of stalk, vesicle and conidia. Among these the sake organism represents one extreme, with its long stalks, heads with principally simple sterigmata and large conidia; *Aspergillus parasiticus* of Speare is at the other extreme with short stalks and intense green color. Each strain should be carefully identified either by varietal name or by adequate description before experimental results using it can be properly valued. The name *Aspergillus oryzae* unmodified should be reserved for the organism of the sake fermentation.—Members of this group are universally distributed. *A. flavus* and its allies are consistently found in the soil and widely distributed in foodstuffs, as shown by our collections from Europe, Asia and many places in America. *A. oryzae* in the strict sense is more limited since we have, only occasionally obtained it from sources other than the Oriental fermentation industries. —[Authors' abst. of paper read before Soc. Amer. Bact.]

208. Torrend, C. **Les polyporacées du Brésil.** [**The Polyporaceae of Brazil.**] Broteria (Ser. Bot.) 18: 23–43. *4 pl.* 1920.—A discussion of the Brazilian species of the genus *Ganoderma* Karst., as limited by C. G. Lloyd, with a key to the species and notes on 17 species and many extra-limital forms. The plates are from photographs, illustrating gross characters only. The forms *hemisphaericum*, *annulatum*, and *rubellum* of *G. lucidum* are apparently proposed as new. The series is apparently to be continued.—*E. B. Chamberlain.*

209. Van der Bijl, P. A. **The systematic position of the fungus causing root disease of sugar cane in Natal and Zululand.** South African Jour. Sci. 16: 204–206. 1919.—The fungus causing root disease of sugar cane in Natal and Zululand is now definitely referred to Johnston's *Himantia stellifera*, "the stellate crystal fungus." This fungus also probably occurs on indigenous grasses in South Africa. Whether the true *Marasmius sacchari* occurs in South Africa must remain undecided until the fructifications are collected.—*E. M. Doidge.*

210. Weston, William H., Jr. **Philippine downy mildew of maize.** Jour. Agric. Res. 19: 97–122. *Pl. A and B (col.) and 16–25.* 1920.—See Bot. Absts. 6, Entry 260.

211. De Wildeman, E. **À propos du genre Tetracladium.** [**The genus Tetracladium.**] Compt. Rend. Soc. Biol. Paris 83: 192–194. 1920.—The author insists that this is a true mycelial fungus and that the name should not be suppressed and put among the synonyms of *Asterothrix*. The fungus is widely distributed in northern Europe and is pathogenic, apparently to hyacinth, and other plants.—*E. A. Bessey.*

212. Yasuda, Atsushi. **Eine neue Art von Pterula.** [**A new species of Pterula.**] Bot. Mag. Tokyo 34: 15–16. 1920.—Describes as new, *Pterula fusispora*, from Fukoji mountain, Kasei-gori, Prov. Harima, Japan.—*Roxana Stinchfield Ferris.*

PATHOLOGY

G. H. Coons, *Editor*
C. W. Bennett, *Assistant Editor*

213. Anonymous. **Disposiciones vigentes sobre el servicio de sanidad vegetal. [Regulations in force relating to the plant sanitation service.]** Ofic. Sanidad Veg. Sec. Agric. Com. y Trab. [Cuba] *32 p.* 1919.—This publication contains all quarantine and other regulations in force in Cuba for the control of injurious insects and plant diseases. An appendix gives a number of regulations enacted by other countries, which are applicable to plant products of Cuban origin.—*S. C. Bruner.*

214. Arango, Rodolfo. **Algunas plagas de nuestros cultivos. [Some pests of our cultivated crops.** Ofic. Sanidad Veg. Sec. Agric. Com. y Trab. [Cuba] Bol. 2. *94 p., 23 pl., 20 fig., 1 map.* 1919.—A popular treatise on some of the more common plant diseases and insect pests occurring in Cuba. The diseases considered are the bud-rot of the coconut (attributed to *Bacillus coli communis*), the Panama disease of bananas (due to *Fusarium cubense*), and gummosis of the orange (the more common form of which is caused by a species of *Phytophthora*). The closing chapters are devoted to spraying operations and notes on tree surgery.—*S. C. Bruner.*

215. Ball, E. D., and F. A. Fenton. **What per cent of tipburn is caused by the potato leafhopper?** Jour. Econ. Entomol. 13: 218–221. *Pl. 2.* 1920.—Continuation of hopperburn studies (Bot. Absts. 3, Entry 387). A number of fields of potatoes about Ames, Iowa, were kept under continuous observation during the entire season. No evidence of "tipburn" was found in the field until after the nymph generation developed from the over-wintering leaf-hopper. The amount of burning was found to be proportional to the number of leaf-hoppers on the particular leaves. In fields where there were no leaf-hoppers "tipburn" did not appear.—The author gives results of studies with the use of cages to exclude and to include leaf-hoppers.—*A. B. Massey.*

216. Belgrave, W. N. C. **A wet rot of Para rubber roots.** Dept. Agric. Federated Malay States Bull. 28. *21 p. 9 pl.* 1919.—Symptoms of this disease are a wet rotting of diseased wood, the fungus rapidly entering the heartwood and advancing fastest there; collapse and decay of the inner bark; the frequent presence of a tough skin-like dark, brownish red mycelium mass intimately bound up with the outer bark layers; the absence of obvious mycelial strands, the presence of small, powdery-looking, yellow pustules; the presence of brown lines in the wood; the presence of discoloured, light brown areas in the wood. The spread of the fungus is by contact of roots with diseased material. Fructifications are rare. Originally determined as *Poria hypolateritia* (Berk), since found to be *Poria pseudoferreus* Wak. As the fungus so rarely fruits, "clean-clearing" an estate is a practical preventative.—*T. F. Chipp.*

217. Belgrave, W. N. C. **Notes on mycology during 1918.** Agric. Bull. Federated Malay States 7: 141–143. 1919.—The diseases of Para rubber examined in Malaya during 1918 are discussed.

218. Beumee, C. G. B. **Over Bastverwondigen aan den djati. [Bark wounds of teak.]** Mededeel. Proefsta. Boschw. Dept. Landb. Nijverheid en Handel Nederlandsch-Indië 4: 31–54. *Pl. 12–17.* 1919.—An introductory discussion is given of the tissues which take part in wound healing. Among the causes of injuries which are not followed by regeneration of the affected tissues are: (1) Fires in teak woods,—these are usually ground fires rather than crown fires. (2) Theft of bark,—buffalo herders take strips of bark to use for cord or rope. An illustration is given of a tree from both sides of which strips of bark had been taken, with the result that the intervening wood had entirely rotted away. (3) Felling wounds produced by felled trees falling against those which remain standing. Injuries are also described due

to bending by strong wind, quickly followed by the regeneration of the injured tissue. Tension on the windward side of the trunk results in square breaks in the bark, accompanied by vertical slits and the separation of a strip of bark from the wood. The cambium produces new bark under this old loose layer, which later falls off. In one case new tissue was also formed on the inner surface of the loosened bark. False annual rings ascribed to wind bending are illustrated by photographs.—*F. Cramer.*

219. Bigelow, W. D. **Heat penetration in canned foods.** [Abstract.] Absts. Bact. 4: 11. 1920.—A pyrometer was described adapted to use in commercial canning plants in determining the temperature of the center of sealed cans. Heating curves were shown giving the relative heat penetration of typical foods and illustrating the influence of consistency of the product, initial temperature, and size of cans. on heat penetration. The use of rotating sterilizing machines was also discussed and the influence of different speeds of rotation of the can on the heat penetration was shown by means of appropriate curves. [Author's abst. of paper read before Soc. Amer. Bact.]

220. Brandes, E. W. **Artificial and insect transmission of sugar-cane mosaic.** Jour. Agric. Res. 19: 131–138. 1920.—Mosaic disease of sugar-cane was communicated to healthy plants in greenhouses near Washington by hypodermic injections, at growing points, of expressed juice from diseased plants.—*Aphis maidis* also proved to be a carrier of the virus. Seed transmission is not definitely established.—*D. Reddick.*

221. Chipp, T. F. **A host index of fungi of the Malay Peninsula.** Gardens' Bull. Straits Settlements 2: 231–238. 1920.—An alphabetical index of hosts, with all fungi hitherto recorded for them in Malaya.—*T. F. Chipp.*

222. Chipp, T. F. **The fungus flora of Hevea brasiliensis.** Gardens' Bull. Straits Settlements 2: 186–192. 1920.—An enumeration of all fungi recorded in Malaya for the Para rubber tree; 67 species are mentioned.—*T. F. Chipp.*

223. Clinton, G. P. **Inspection of phaenogamic herbaria for rusts on Ribes sp.** Connecticut [New Haven] Agric. Exp. Sta. Bull. 214: 423–427. 1916–1917.—Specimens of *Ribes*, including *Grossularia*, from 8 eastern and 3 western herbaria were examined. No light was thrown on the early occurrence of *Cronortium ribicola*, but information was obtained on distribution of three other rusts in U. S. A. These are *Aecidium Grossulariae*, *Coleosporium ribicola* and *Puccinia Ribes*. The distribution of each is given.—*Henry Dorsey.*

224. Clinton, G. P., and L. F. Harvey. **Co-operative potato spraying in 1917.** Connecticut [New Haven] Agric. Exp. Sta. Bull. 214: 411–420. 1917.—These were potato-spraying experiments in which 4–4–50 Bordeaux mixture was applied. Hot weather on three days the last of July and the first of August prematurely killed the vines in August in two fields and injured them in two more fields. Trampling the vines in one field caused positive injury before there was time for effect of spraying to show.—Two fields were benefited about enough to pay expenses. In a fourth field there was an increase of 18 bushels. In the fifth field the increase due to spraying was 95 bushels, which was very much in excess of cost.—*Henry Dorsey.*

225. Clinton, G. P., and Florence A. McCormick. **Infection experiments of Pinus strobus with Cronartium ribicola.** Connecticut [New Haven] Agric. Exp. Sta. Bull. 214: 428–459. *Pl. 37–43.* 1916–1918.—The history of the introduction of the disease into the state is given. Various attempts to infect stems, buds and leaves are described, the inoculations being made with plants in Petri dishes, in greenhouses, under tents and in the open. One-, two-, and three-year seedlings were tested.—The results of the inoculations indicate that infection occurs from late summer to late fall through the leaves only. Inconspicuous, yellowish spots are produced at the point of infection. These become apparent in the following early summer. Later there is invasion of the stem causing slight swelling and discoloration.

Pycnia may develop. Swelling of the stem proceeds in the third year, with pycnial development during the summer. If pycnia were formed the previous year, aecial formation occurs in the spring.—*Henry Dorsey.*

226. Coons, G. H. **Botanical Department notes.** Michigan Agric. Exp. Sta. Quart. Bull. 2:70–75. *Fig. 3–6.* 1919.—Brief popular notes on winter handling of potatoes, Jonathan fruit spot and bitter pit of apple. Progress of barberry campaign is shown by tables.—*E. A. Bessey.*

227. De Wildeman, E. **À propos du genre Tetracladium. [The genus Tetracladium.]** Compt. Rend. Soc. Biol. Paris 83: 192–194. 1920.—See Bot. Absts. 6, Entry 211.

228. Dickson, James G., and Helen Johann. **Production of conidia in Gibberella saubinetii.** Jour. Agric. Res. 19: 235–237. *1 fig.* 1920.—Repeated and abundant crops of conidia may be produced in short periods of time from ascospores, sporodochia conidia, vegetative conidia, or mycelium, when favorable moisture and temperature conditions obtain. This ability of the wheat-scab organism, to produce an abundance of virulent spores in short periods of time, has an important bearing on epiphytotics.—*D. Reddick.*

229. Doidge, Ethel M. **The eradication of citrus canker.** Jour. Dept. Agric. Union of South Africa 1: 124–134. 1920.—This is a tabular statement of the progress of the campaign for the eradication of citrus canker. There are now only three farms in the Rustenburg and Pretoria districts on which it is expected that canker may recur.—*E. M. Doidge.*

230. Elliott, Charlotte. **Halo-blight of oats.** Jour. Agric. Res. 19: 139–172. *Pl. C (col.) and 26–35.* 1920.—Disease is practically confined to oats (*Avena*) but has been found on rye (*Secale*) and was produced artificially on wheat (*Triticum*) and barley (*Hordeum*). Disease appears under conditions unfavorable for growth of host. "Only under particularly favorable weather conditions does the blight develop sufficiently to attract attention or to do serious damage."—Typical lesions are 0.5 to 2 cm. in diameter and are characterized by halo-like margins of chlorotic tissue about a center of dead tissue. A white organism *Bact. coronafaciens*, n. sp., is responsible for the disease. The organism is described and cultural characters presented in detail. Group number, 221.2323023.—A variant strain is described briefly. A yellow motile rod, found commonly on oats, is described, without name, and its cultural characters presented; group number, 221.3333533; non-pathogenic to oats.—*Bact. coronafaciens* persists on seed. Formaldehyde treatment (1:320) "as for smut" does not entirely control the disease and hot-air treatment for 30 hours at 100° is not effective.—The organism is practically confined to the center of the lesion and the halo is probably caused by a diffusible substance, perhaps ammonia.—An extended discussion of and comparison with other bacterial diseases of cereals is included. [See Bot. Absts. 1, Entry 610.]—*D. Reddick.*

231. Elliott, John A. **Field diseases of sweet potatoes in Arkansas.** Arkansas Agric. Exp. Sta. Ext. Circ. 90: 20–28. *Pl. 1–2.* 1920.

232. Federal Horticultural Board, U. S. Dept. Agric. **Quarantine on account of the European corn borer and other dangerous insects and plant diseases. Notice of quarantine No. 41, with regulations.** Serv. and Reg. Announcem. 67. *P. 27–28.* 1920. [Also issued as unnumbered pamphlet from Office of Secretary of Agriculture.]—Of the following plants no stalks or other parts, whether used for packing or for other purposes, in the raw or unmanufactured state are permitted entry into U. S. A.: maize (*Zea mays*), broom corn (*Andropogon sorghum* var. *technicus*), sweet sorghums and grain sorghums (*A. sorghum*), sudan grass (*A. sorghum sudanensis*), Johnson grass (*A. halepensis*), sugar cane (*Saccharum officinarum*), pearl millet (*Pennisetum glaucum*), napier grass (*P. purpureum*), teosinte (*Euchlaena luxurians*), and Job's tears (*Coix lachryma-jobi*). Exceptions are sorghum hay from Canada and clean shelled or threshed grain. Permission may be secured to import broom corn but disinfection is a condition of entry.—*D. Reddick.*

233. Federal Horticultural Board, U. S. Dept. Agric. **Quarantine against corn or maize from Mexico. Notice of quarantine, No. 42, with regulations.** Serv. and Reg. Announcem. 67. *P. 15–17.* 1920. [Also issued as unnumbered pamphlet from Office of the Secretary of Agriculture.]—Maize (grain) from Mexico is prohibited entry into U. S. A. except under regulations, which are stated, and which are designed to prevent introduction of pink bollworm of cotton with it.—*D. Reddick.*

234. Federal Horticultural Board, U. S. Dept. Agric. **Stocks, cuttings, scions and buds of fruits quarantine. Notice of quarantine No. 44.** Serv. and Reg. Announcem. 67. *P. 33–34.* 1920. [Also issued as unnumbered pamphlet from Office of Secretary of Agriculture.]—Vegetative parts of fruits generally are prohibited entry into the United States from Asia, Japan, Philippine Islands, and Oceania, including Australia and New Zealand. The following diseases are mentioned specifically: Japanese apple cankers (*Valsa mali* and *Diaporthe mali*), blister blight (*Taphrina piri*), and rusts (*Gymnosporangium koreaense* and *G. photiniae*).—*D. Reddick.*

235. Federal Horticultural Board, U. S. Dept. Agric. **Sterile packing material for packing of bulbs authorized.** Serv. and Reg. Announcem. 67. *P. 34–35.* 1920.—Plant quarantine 37, making "freedom from soil, etc." a condition of entry into the United States, is amended to allow the use of subsoil from Japan, dune sand from Holland, coral sand from Bermuda, and ground peat. Official certificates must be used. Such materials are deemed sterile so far as diseases and insects are concerned.—*D. Reddick.*

236. Fulton, H. R. **Decline of Pseudomonas citri in the soil.** Jour. Agric. Res. **19:** 207–234. 1920.—Tests on many types of soil, including representative ones from the citrus regions, show a very rapid decline of *P. citri* in all, reaching the vanishing point in 14 days. This decline is retarded slightly by rendering the soil slightly alkaline with lime water, by lowering its temperature, and more decidedly by withholding water or by previous sterilization with steam. The organism persists in limited numbers for over a year in air dry soil but disappears promptly on the addition of water. The decline, on the other hand, is hastened by the addition of dilute sulfuric acid or by a moderate increase in temperature. It is more rapid in water than in soil but is prolonged decidedly in sterilized water. The organism easily penetrates the soil to depths of ordinary cultivation but the normal decline seems to occur at such depths.—Certain bacteria found commonly in soils have a marked inhibiting effect on *P. citri* in culture and probably are concerned with its decline in soil.—Young roots of grapefruit seedlings are not readily infected except through wounds.—Rigid experimental methods for making the determinations were developed and tested. They are described in detail.—*D. Reddick.*

237. Gochenour, W. S., and Hubert Bunyea. **The filtration of colloidal substances through bacteria-retaining filters.** [Abstract.] Absts. Bact. **4:** 2. 1920.—"The technic involved in the filtration of raw meat juice is: The meat juice is first cleared of coarser particles by centrifugalization, and is then mixed with a small amount of kieselguhr and again centrifugalized. The supernatant fluid is drawn off, mixed with a sufficient amount of kieselguhr to make a paste approximating the consistency of a thin gruel, and poured directly over the filter candle. Best results are obtained by using a minimum amount of vacuum. It is therefore helpful to place the filter candle upright in a mantle, allowing gravitation to minimize the amount of vacuum necessary to draw the material through the filter candle into the vacuum flask. The filtration process should immediately follow centrifugalization. The finally filtered product is capable of complete coagulation. Milk, hemolized erythrocytes and other colloids can be rapidly filtered by this process." [From authors' absts. of paper read before Soc. Amer. Bact.]—*D. Reddick.*

238. Hartwell, Burt L. **Thirty-first annual report of the Director of the Rhode Island Agricultural Experiment Station.** Bull. Rhode Island State Coll. **14:** 57–65. 1919.—See Bot. Absts. 6, Entry 15.

239. Hartwell, Burt L., and S. C. Damon. **A field comparison of hydrated lime with limestone of different degrees of fineness.** Rhode Island Agric. Exp. Sta. Bull. 180. *18 p.* 1919.—See Bot. Absts. 6, Entry 16.

240. Hartwell, Burt L., F. R. Pember, and G. E. Merkle. **The influence of crop plants on those which follow. II.** Rhode Island Agric. Exp. Sta. Bull. 176. *47 p.* 1919.—See Bot. Absts 6, Entry 18.

241. Johnston, J. R. **La enfermedad "mosaico" de la caña de azucar. [The mosaic disease of sugar cane.]** Ofic. Sanidad Veg. Sec. Agric. Com. y Trab. [Cuba] Circ. 6. *11 p., 3 pl. (colored), 2 fig.* 1919.—The author gives a description of the disease together with a brief discussion of its cause, the damage occasioned, varieties of cane attacked, control, and known distribution in Cuba and other countries. The following recommendations are made: (1) That only carefully selected healthy seed be used. (2) On buying seed cane from a distant locality, obtain a certificate from the Office of Plant Sanitation, which guarantees the said cane to be free from infection. (3) Any person desiring to obtain cane for seed from a foreign country for experimental purposes, should request this through mediation of the Department of Agriculture, Commerce and Labor, in accordance with the decree of the Secretary of Agriculture dated July 16, 1919. This decree prohibits the importation of sugar cane from all countries, except that consigned to the Department of Agriculture and intended for experimental purposes, as well as the transportation within the national territory of cane from infected zones to other localities.—*S. C. Bruner.*

242. Koch, L. **Uitkomsten van een proef met het gebruik van "gedegenereerde" cassavebibit. [Results of a trial with the use of degenerated cassava cuttings.]** Korte Ber. Selectieen Zaadtuinen voor Rijst en andere eenjarige Inlandsche Landbouwgew., Dept. Landb. Nijverheid en Handel [Buitenzorg] **12**: 1-5. Feb., 1919.—Varieties of cassava imported into East Java from West Java (with moist climate) were reported to degenerate and a trial was made at the Plant Breeding Station for Annual Crops at Buitenzorg to compare the value for propagation of these totally degenerated cuttings with cuttings of the same variety that had been grown for more than ten years at Buitenzorg. Although the cuttings were made from a degenerated crop no difference at all was found between the yields of the degenerated and the normal cassava. The degeneration may result in very low yields. The following percentages indicate the approximate yield of cuttings of several "generations:"—Import, 100; 1st generation, 80; 2nd gen., 65; 3rd gen., 50; 4th gen., 37; 5th gen., 35. In some cases the percentage for the 5th generation was only 20-30.—*L. Koch.*

243. Kornauth K., and A. Wöber. **Versuche zur Bekämpfung des roten Brenners und des echten Mehltaues der Reben im Jahre 1917. [Investigations on control of grape diseases caused by Pseudopeziza tracheiphila and Oidium.]** Zeitschr. landw. Versuchsw. Österr. **21**: 295-312. 1918.—(1) Red leafburn. Treatments made in the spring and at "regular intervals." Bordeaux mixture (1.5 per cent) gave best results. "Bosnapasta" (1.5 per cent) gave nearly as good results. Peroxide (3 per cent) was not so good and lime-sulfur solution (2 per cent by volume) was worthless. Sulfur combined with Bordeaux mixture added nothing. (2) Downy mildew. Soda solution and "antifungin" injured the foliage. Gray sulfur (trade name, "Kreide") gave the most slight odor and taste of tar oil but this disappeared in fermentation; in this respect "melior" and calcium sulfid were worse. Potassium-permanganate-lime mixture gave satisfactory control but sodium thiosulfate proved worthless, as did limesulfur solution, "antifungin" and soda solution. [Through abst. by Matouschek in: Zeitschr. Pflanzenkr. **29**: 262. 1919 (1920).]—*D. Reddick.*

244. Labrie, L'abbé. **Curueux cas d'implantation de cuscute au sommet d'un arbre. [Curious case of implantation of Cuscuta to the top of a tree.]** Actes. Soc. Linn. Bordeaux (Proces-verbaux) **69**: 57-60. 1915-16.—*Cuscuta minor* D.C., which is usually parasitic on clover, sedges, and grasses, was in one instance found in the top of *Viburnum tinus* L., three meters from the ground.—*W. H. Emig.*

245. Lee, H. Atherton. **Behavior of the citrus-canker organism in the soil.** Jour. Agric. Res. **19**: 189–205. *Pl. 36–37.* 1920.—*Pseudomonas citri* multiplies in sterilized soil but in competition with the usual soil organisms in tubes or boxes commonly does not persist for more than 6 days. Its survival is even shorter in the soil of the orchard.—Cankers were produced in mature wood and in roots of citrus. The organism may persist for a long time in cankers on roots, buried wood and leaves.—*D. Reddick.*

246. Mitchell, D. T. **Poisoning of cattle by feeding on old mealie lands.** Jour. Dept. Agric. Union of South Africa **1**: 138–143. 1920.—The feeding of oxen with cobs infected with *Diplodia zeae* produced in experimental animals a condition which was indistinguishable from that occurring in animals which gained access to old mealie lands, and a similar condition could be set up by feeding on a culture of *Diplodia zeae* grown on sterile maize. The intensity of the symptoms and the mortality depend upon the quantity fed and on the percentage of infection present in the grain. Cultures of allied species of fungi grown on maize are incapable of setting up similar clinical symptoms. The causal factor is not the fungus itself, but must be looked for in the material which is formed as a result of the interaction of *Diplodia zeae*, during its development, with the starchy content of the maize grains.—*E. M. Doidge.*

247. Newell, Wilmon. **Citrus canker eradication. Report of the Plant Commissioner for the biennium ending April 30, 1918.** Florida State Plant Bd. Quart. Bull. **3**: 36–44. 1919. —An account is given of citrus-canker (*Pseudomonas citri*) eradication work during 1917 and 1918, with tables and charts showing the scope, progress and expenditures of the work.—*C. D. Sherbakoff.*

248. Newell, Wilmon. **Report of the Plant Commissioner for the biennium ending April 30, 1918.** Florida State Plant Bd. Quart. Bull. **3**: 82–85. 1919.—A brief report on the work of R. A. Jehle with citrus canker (*Pseudomonas citri*) at Redland, Dade County, Florida. In this work, by inoculation experiment, it was found that of many hosts tried only "wild lime" (*Zanthoxylum fagara*) is susceptible to the disease. The work showed also that of the many methods suggested by various parties for citrus-canker control none but prompt and complete destruction of the infected trees, coupled with rigid disinfecting measures, is of any value.—*C. D. Sherbakoff.*

249. Peglion, Vittorio. **Intorno al comportamento di alcune varietà di frumento rispetto alla carie.** [**Behavior of wheat varieties with respect to bunt.**] Atti. R. Accad. Lincei [Roma] Rend. (Cl. Sci. Fis. Mat. e Nat.) **28**[2]: 398–400. 1919.—Fields of wheat in some localities were found affected with *Tilletia caries* (D.C.) Tul., others with *T. laevis* Kühn and others with both. In infection tests with different wheat varieties, the percentage of spikes affected varied from 33.6 per cent (Cologna variety) to 74.1 per cent (Romanello variety).—*F. M. Blodgett.*

250. Pole-Evans, I. B. **Report on cold storage conditions for export fruit at Capetown.** Union of South Africa Dept. Agric. Ann. Rept. **1918**: 1–8. *8 fig.* 1919.—This is a report on the occurrence of *Penicillium expansum*, *P. digitatum*, and *P. italicum* in cold storage chambers at Capetown and on steam-boats.—*E. M. Doidge.*

251. Putterill, V. A. **A new apple tree canker.** South African Jour. Sci. **16**: 256–271. *Pl. 21–30. 6 fig.* 1919.—A fungus belonging to the genus *Botryosphaeria* has been found to be the cause of a rather serious canker of apple trees at the Vereeniging Estates. An account is given of its morphology and its salient cultural characters, and of a number of inoculation experiments which were carried out. The characters of the fungus are compared with those of *Physalospora cydoniae*, the cause of the New York apple-tree canker from which it is considered to be distinct. The fungus is described as a new species, *Botryosphaeria mali* Putterill.—*E. M. Doidge.*

252. Roberts, Herbert F. **Yellow-berry in hard winter wheat.** Jour. Agric. Res. **18**: 155–169. 1919.—See Bot. Absts. 6, Entry 32.

253. Sanders, J. G., and D. M. DeLong. **Dust versus spray for control of some cherry pests in Pennsylvania.** Jour. Econ. Entomol. 13: 208-210. 1920.—Pests under consideration were curculio, slug and leaf spot. Materials used were sulphur-arsenate-of-lead dust (90–10), lime-sulphur spray (1-40), lime-sulphur-arsenate-of-lead dust (50–45–5), Bordeaux spray (3-3-50 to 1 pound arsenate of lead). Short discussions with results are given.—*A. B. Massey.*

254. Spragg, F. A., and E. E. Down. **Rust resisting sunflowers.** Michigan Agric. Exp. Sta. Quart. Bull. 2: 128–129. *1 fig.* 1920.—Of four varieties of sunflower (*Helianthus annuus*) cultivated in 1918 for a variety test, a South American variety, Kaeurpher, was nearly rust-resistant, the other three being killed before the close of the season.—*E. A. Bessey.*

255. Stevens, H. E. **The potato wart disease.** Florida State Plant Bd. Quart. Bull. 3: 116–120. 1919.

256. Stirling, Frank. **Citrus canker eradication.** Florida State Plant Bd. Quart Bull. 3: 122-123, 134-135. 1919. *Ibid.* 4: 14–15, 35–36. 1920.—Tabular statement of progress of the work of eradicating citrus canker (*Pseudomonas citri*).—*C. D. Sherbakoff.*

257. Strampelli, Nazareno. **Esperienze intorno alla carie (Tilletia Caries) del frumento.** [**Experiments with stinking smut in wheat.**] Atti R. Accad. Lincei [Roma) Rend. (Cl. Sci. Fis. Mat. e Nat.) 28^2: 151–153. 1919.—Having noticed that different varieties of wheat were differently affected by stinking smut, the author tested the susceptibility of a number of varieties by planting the seed in furrows thoroughly sprinkled with smut spores. The percentage of healthy plants in the different varieties ranged from 0 to 45. The influence of the position of the spores in the soil with relation to the wheat seed was also tested. Only when the spores were in the same soil layer with the wheat did any considerable infection occur.—*F. M. Blodgett.*

258. Traverso, G. B. **Gelate tardive ed infezione di rogna degli olivi nel 1919.** [**Late frosts and infection of olives by scab in 1919.**] Staz. Sper. Agr. Ital. 52: 463–484. *Fig. 1–7.* 1919.—The author describes the condition of olive plantings of various ages and in various localities in Italy, after a season characterized by late frosts. The organism responsible for the diseased condition is the well-known *Bacillus oleae* (*B. savastanoi*), but the extremely severe attacks of the season must be ascribed to the effects of freezing in affording avenues of entrance. The author recommends heavy pruning and treatment with Lotrionte's ferro-calcic mixture (ferrous sulphate 5 kgm., hydrated lime 10 kgm., water 100 l.). Bordeaux mixture with the addition of some disinfecting substance such as lysoform, phenol or formalin (1.5-2 per cent) is also recommended.—*A. Bonazzi.*

259. Van der Bijl, Paul A. **Preliminary studies on some fungi and bacteria responsible for the deterioration of South African sugars.** Union of South Africa Dept. Agric. Sci. Bull. 12: 1–32. *Fig. 1–14.* 1920.—A brief characterization is given of fungi isolated from sugar samples; all are able to invert sucrose to some extent, and with one exception grew in solutions of 63 Brix concentrations. The resistance of the fungi to disinfectants was also tested. A similar series of experiments was also carried out with a number of bacteria isolated from sugar samples. The ability of these organisms to grow on sugar is largely dependent on the moisture content and temperature of the store-houses and mills. Formalin, chloride of lime and milk of lime appear to be the most suitable disinfectants.—*E. M. Doidge.*

260. Weston, William H., Jr. **Philippine downy mildew of maize.** Jour. Agric. Res. 19: 97–122. *Pl. A and B (col.) and 16–25.* 1920.—Disease is prevalent and often very destructive throughout Philippine Islands. Teosinte (*Euchlaena luxurians*) and sorghum (*Andropogon*) as well as maize (*Zea*) are affected, but sorghum is highly resistant. Native, wild grasses have not been found affected —"Symptoms of the disease may appear from the time the plants are seedlings with three or four leaves to the time the tassels and silk are developed. In general, infected plants show a yellowing of the leaves in more or less restricted striped areas, a

whitish down of conidiophores, principally on the leaves, abnormalities in growth of the vegetative parts, and abortive development of the ear, resulting in partial or complete sterility. These effects of the disease are described and illustrated."—The disease is caused by *Sclerospora philippinensis* n. sp. which is fully described and illustrated. *S. maydis* of Reinking is a synonym. Oospores have not been observed. The fungus is compared critically with other oriental *Sclerosporae*.—Conidia are produced abundantly at night; they germinate promptly by production of a tube and at temperatures between 6.5° and 25°. Desiccated conidia lose their vitality.—An undescribed species of *Sclerospora*, producing only oospores, has been found on *Saccharum spontaneum*, a common wild grass.—*D. Reddick.*

261. Winslow, C.-E. A., and I. S. Falk. **A contribution to the mechanism of disinfection.** [Abstract.] Absts. Bact. **4**: 2. 1920.—"The view of Chick and other earlier workers that the rate of dying of bacteria follows the orderly course of a monomolecular reaction has recently been challenged by Brooks, who shows that in the case of hemolysis of blood cells and inferentially in the case of bacterial death, the logarithmic values corresponding to the number of surviving cells do not lie on a straight line. He concludes that the shape of the curve is dependent essentially upon two independent variables; (1) the velocity at which the physicochemical changes are going on in the protoplasm of the cells; and (2) the variations in resistance of the individual cells to the toxic substances present.—From somewhat exhaustive studies of the rate of mortality of colon bacilli in water and salt solutions we are able to confirm Brooks' conclusion as to the shape of the curve, since we find the rate of reduction is sufficiently slow to permit of careful observation we do obtain an inflected curve rather than a straight line.—We believe, however, that these results can be explained more simply without Brooks' postulate of a specific factor, by the following assumptions:—That the death of a cell is due to a reaction $A \rightarrow M$ and a reaction $M \rightarrow B$. Each of these reactions is of a monomolecular order (and there are probably many more than two; but two will serve for our argument). The velocity of the second reaction at any time is dependent upon the concentration of M, and hence, is dependent upon the velocity of the first reaction. Disinfectants and toxic substances accelerate one or the other of these reactions, and hence lead more rapidly to death. Differences in the ages of the individual cells, we may consider, are accompanied by differences in the concentration of one or the other substance,—and these differences determine the velocity of the toxic reaction. Since the velocity of a reaction is always dependent upon the concentration of reacting substances, such variations from monomolecular reaction curves as have been observed in studies of disinfection, hemolysis, and other processes are easily explained quantitatively by the assumption of two, dependent, monomolecular reactions; of different rate; and exactly such curves are figured by Mellor in his 'Chemical Dynamics and Statics.'"—[Authors' abst. of paper read before Soc. Amer. Bact.]

262. Wöber, A. **Versuche zur Bekämpfung des roten Brenners der Reben im Jahre 1918. [Investigations in the control of red leaf burn of grape in 1918.]** Allgem. Weinzeitg. **36**: 9–10. 1918.—Reports use of a number of proprietary compounds for control of leaf burn, caused by *Pseudopeziza tracheiphila*, in Austria Winter treatment with 40 per cent ferrous sulfate gives better results than the use of 10 per cent sulfuric acid, but winter treatment must be supplemented with summer spraying.—Of the various standard and proprietary mixtures tested Bordeaux mixture and "Bosna" were best. [Through abst. by Matouschek in: Zeitschr. Pflanzenkr. **29**: 263. 1919 (1920).]—*D. Reddick.*

263. Wolff, W. H. **Influence of the prevention of leaf blight on the growth of nursery cherries and pears.** Amer. Nurseryman **31**[5]: 110. 1920.

PHARMACEUTICAL BOTANY AND PHARMACOGNOSY

Heber W. Youngken, *Editor*
E. N. Gathercoal, *Assistant Editor*

264. Bardie, A. **Quelques notes sur la Physalis Alkekengi dans la Gironde.** [Notes concerning Physalis Alkekengi L.] Actes Soc. Linn. Bordeaux (Proces-verbaux) 69: 39–47. 1915–16. (Received May, 1920.)

265. Cauda, A. **L'essenza di senape nei vegetali.** [The mustard-oil content of plants.] Staz. Sper. Agr. Ital. 52: 544–548. 1919.—The physiological function of allylisothiocyanate is not as yet known, but indications are that the content of a plant in this compound is not only characteristic of the species but much dependent on the environment. The close relation of the mustard oil and the cyanic acid group is indicative of the great importance these compounds play in the physiology of plants. According to Gola the more sterile the environment, the greater the content of cyanic acid, and to this may be added that the more sterile the environment the greater the content of mustard oil. If to all the plants known to contain cyanic acid were to be added all those known to contain mustard oil, the following list would be compiled: the *Sinapis, Cheiranthus Cheirei L., Lepidium Draba L., Brassica napus L., Raphanus sativus L., Raphanus raphanistrum L., Sisymbrium alliaria, Nasturtium officinale L., Lepidium sativum, Cochlearia armoracia, Reseda lutea L., Reseda luteola L., Capparis spinosa,* various species of *Acacia, Thlaspi arvense, Asparagus officinale* and various species of *Erysimum.* Analysis of seeds of several among these genera led the author to conclude that the plants grown in southern climates gave seeds having a smaller percentage of oil than seeds from plants grown in more northern localities. This, he assumes, indicates incomplete transformation of albuminoids which are then not assimilated completely in those places where the vegetation of the plant is not fully accomplished. Seeds from plants growing wild in the north of Italy had a higher mustard-oil content than seeds from plants cultivated in Sicily; cultivation seems therefore to diminish the mustard-oil content of the plants, although the seeds from these same southern plants under cultivation have a greater fat content. In seeds and sections of plants the author could find specialized cells (such as were pointed out by Guignard) within which there was a localization of myrosin which acts on potassium myrosinate with the formation of the isothiocyanate of allyl according to the following equation: $C_{10}H_{16}NKS_2O_9 + H_2O = C_6H_{12}O_6 + C_3H_5NCS + HKSO_4$. The number and size of these cells tends to diminish in etiolated leaves. Seeds of *Sinapis nigra* contained 0.294 per cent of mustard oil, while green seedlings (air dry) contained 0.280 per cent, and air dry etiolated seedlings contained 0.170 per cent. A method is described for the determination of the mustard-oil content by oxydation with bromine water and the weighing of the sulphate radical as barium sulphate. The apparatus used is also described.—*A. Bonazzi.*

266. Chodat, R. **Études faites au jardin alpin de la "Linnaea." I. Sur quelques faits de botanique et de geographie economique a Bourg-Saint Pierre.** [Observations made at the alpine garden of Linnaeus. I. Concerning certain things of economic value related to botany and geography at Bourg-Saint Pierre.] Bull. Soc. Bot. Genève 11: 30–41. 1919.—See Bot. Absts. 6, Entry 9.

267. Fuller, H. C. **Report on alkaloids.** Jour. Assoc. Official Agric. Chem. 3: 379. 1920.—Report of progress on atropin and strychnin determination.—*F. M. Schertz.*

268. Haslett, J. P. **Plants used as ingredients in the manufacture of country spirits in Southal Pargavas.** Indian Forester 45: 530–531. 1919.—Twenty-five species of native Indian plants are given from which spirits are made from the roots and two in which the bark is used. —*E. N. Munns.*

269. Jamieson, George S., and Walter F. Baughman. **The chemical composition of cottonseed oil.** Jour. Amer. Chem. Soc. 42: 1197–1204. 1920.

270. Linsbauer, L. **Zur Bekämpfung der Kohlweisslinge. [Combating the white cabbage-butterfly.]** Naturw. Zeitschr. Forst- u. Landw. 17: 147–149. 1919.—French war-prisoners in Germany, and gardeners in various localities, have been in the habit of sticking branches of the common black elder (*Sambucus racemosa*) in the ground between cabbage rows to protect them against the white cabbage-butterfly. The author successfully tried the same experiment. It has also been occasionally found that hemp planted with cabbage acts as a protection against the same butterfly. The effect of hemp is ascribed to odors emitted by the plant glands; but how elder acts is not known. An effort by the author to spray the cabbage with a solution obtained by boiling green leaves of black elder proved unsuccessful.—*J. Roeser.*

271. May, W. L. **Whorled milkweed, the worst stock-poisoning plant in Colorado.** Colorado Agric. Exp. Sta. Bull. 255. *39 p., 28 fig.* 1920.—Whorled milkweed (*Asclepias galioides*) has been shown to be responsible for heavy losses of sheep, cattle, and horses in western and southwestern Colorado. A detailed description of the plant is given, whereby it may be distinguished from two very closely related species, *Asclepias verticillata* and *Asclepias pumila.* The geographical distribution of the weed in Colorado, its habitat, and methods of distribution are discussed, also methods of eradication.—*W. G. Sackett.*

272. Nelson, E. K. **The composition of oil of chenopodium from various sources.** Jour. Amer. Chem. Soc. 42: 1204–1208. 1920.

273. Nord, F. F. **Der Acetaldehyd in der Natur, Ergebnisse des Abfangverfahren. [Acetaldehyde in nature. Methods of isolation.]** Naturwiss. 7: 685–687. 1919.

274. Scurti, F., and C. E. Zay. **Distillazione della lolla di riso con acidi condensati per la preparazione dei solventi dell'acetilcellulosa. [The distillation of rice chaff with concentrated acids for the preparation of acetylcellulose solvents.]** Staz. Sper. Agr. Ital. 52: 278–290. 1919.—In view of the facts that furol, one of the most appropriate solvents of acetylcelluloses, is not easily obtained, and that pentosans yield it under treatment with concentrated acids, according to the formula $C_5H_{10}O_5 = 3H_2O + C_4H_3O.COH$, the authors utilized the large amounts of pentoses in rice chaff. The production and distillation of furol is done in a constant level still in which the ratio chaff: acid: distillate is 1:10:10, when the acid used is 30 per cent H_2SO_4 at the start. When three parts of distillate have passed over, the constant level apparatus is stopped and the acid allowed to concentrate to 50 per cent when the distillation is continued. When four more parts of distillate are collected furol formation has ceased but there is an increase in acidity due to the formation of acetic acid, which can be recovered by additional distillation and concentration. Distillation of the dilution thus obtained, in presence of NaOH, with formation of $NaC_2H_3O_2$, and additional distillation of the distillate obtained in presence of NaCl gave the furol in a concentrated solution. The yields obtained were 40 grams furol, 110 grams $NaC_2H_3O_2$ and 650 grams of carbonaceous material, from 1 Kg. of chaff. The H_2SO_4, recovered in a concentration of 50 per cent, is well suited to the manufacture of perphosphates. The carbonaceous matter obtained has a calorific value of 3300 (Mahler).—*A. Bonazzi.*

275. Smith, F., and C. T. White. **An interim census of cyanophoric plants in the Queensland flora.** Proc. Roy. Soc. Queensland 30: 84–90. 1918.—Of the plants listed in this paper 13 are grasses, 10 are native ferns and 9 belong to the natural order *Proteaceae. Passifloraceae* and *Droseraceae* are also prominently cyanogenetic families. The order *Chenopodiales* has not been previously recorded as containing any cyanophoric plant. Twenty-two plants are recorded for the first time as yielding hydrocyanic acid. Several of the plants recorded are of economic importance in relation to the poisoning of stock.—*J. H. Faull.*

276. Wilson, E. H. **Camphor, Cinnamomum Camphora Nees & Ebermaier.** Jour. Arnold Arboretum 1: 239–242. 1920.—An account of the camphor industry of eastern Asia and particularly that of Formosa is given.—*Alfred Rehder.*

SOIL SCIENCE

J. J. Skinner, *Editor*
F. M. Schertz, *Assistant Editor*

ACIDITY AND HYDROGEN-ION CONCENTRATION

277. Blair, A. W., and A. L. Prince. **The lime requirement of soils according to the Veitch method compared with the hydrogen-ion concentration of the soil extract.** Soil Sci. 9: 253–259. *2 fig.* 1920.—Determinations were made of the lime requirement by the Veitch method and of the hydrogen-ion concentration of the soil extract by a colorimetric method, on plots of Sassafras loam to which varying quantities of limestone had been added. The hydrogen-ion concentration of the soil extract decreased with increasing applications of limestone, but not necessarily in proportion to the amount of limestone added. A fairly close correlation exists between the hydrogen-ion concentration of the soil extract and the lime requirement as determined by the Veitch method. Soils having a P_H of 6.7 are alkaline by the Veitch method.—*W. J. Robbins.*

278. Demonlon, A. **The reaction of soils, its determination and practical significance.** Rev. Sci. 58: 173–177. 1920.—Discussion and general review of work on soil acidity.—*R. B. Deemer.*

279. Joffe, Jacob S. **Hydrogen-ion concentration measurements of soils in connection with their "lime-requirements."** Soil Sci. 9: 261–266. *2 fig.* 1920.—The lime requirement of soils showing about the same P_H values is considerably higher for soils high in organic matter than for sandy soils. In using the Veitch method a P_H value of 6.6–6.8 of the solution before evaporation indicates that the end point of the lime requirement by the Veitch method has been reached.—*W. J. Robbins.*

280. Wherry, Edgar T. **The soil reactions of certain rock ferns. I.** Amer. Fern Jour. 10: 15–22. 1920.

281. Veitch, F. P. **Report on the lime requirement of soils.** Jour. Assoc. Official Agric. Chem. 3: 371–374. 1920.—Report of progress.—*F. M. Schertz.*

INFLUENCE OF BIOLOGICAL AGENTS

282. Brown, P. E., and W. V. Halversen. **Effect of seasonal conditions and soil treatment on bacteria and molds in soil.** Iowa Agric. Exp. Sta. Res. Bull. 56: 251–278. 1919.—This study of the numbers of bacteria and molds in the soils of six differently-treated plots at the Iowa Agric. Exp. Sta. throughout one full year showed that the bacteria decreased in the late fall with lowering temperature, until the soil became frozen, when the number rose and fell with the temperature regardless of the moisture. Upon thawing of the soil, the number decreased but this was followed by an increase with increasing temperature and a maximum number was reached on June 19 for all the cultivated plots and on April 12 for the continuous timothy plot. The maximum counts were obtained on February 12 and June 19 with intervening minimum counts. During the summer and early fall, the bacteria did not develop parallel with either moisture or temperature. Applications of peat depressed the bacteria, manure and clover increased the number, while the continuous timothy plot showed the highest number, which may have been due to the topography of the plot.—The number of molds in the soils varied from one sampling to another, but there was no apparent effect of temperature, moisture, or soil treatment. The actual number of molds ranged from 42,000 to 131,000 per gram of soil, on the average. The number generally amounted to one-fortieth to one-fiftieth of the bacteria present. There was no apparent relation between the bacteria and molds. Three media were used in the work. Albumen agar gave the highest count of bacteria with modified synthetic agar second and Cook's No. 11 third. In the case of the molds, albu-

men agar gave the lowest counts while the other two media gave about the same results.—Active mold growth was shown in normally cultivated soils by the development of mycelia from small portions of soil when inoculated into agar plates. The presence of mold spores in the soil is believed to be important, as it indicates the previous and future development of active mycelia. There is nothing yet to disprove the idea that molds go through a regular life cycle in the soil.—*P. E. Brown.*

283. Gillespie, Louis J. **Reduction potentials of bacterial cultures and of water-logged soils.** Soil Sci. 9: 199–216. *4 fig.* 1920.—A discussion is given of the quantity factor and the intensity factor of oxidation and reduction. Oxidation and reduction potentials are taken as measurements of the intensity factor and the methods used to measure these potentials in bacterial cultures and soils are described. Constant reduction potentials, in value close to the hydrogen-electrode potentials, were secured for the facultative anaerobe *B. coli*, and also for mixed cultures of soil organisms when grown in a deep layer. Measurements of cultures of aerobes showed progressively increasing reduction potentials with lapse of time, but in no case did the reduction potential approach the hydrogen-ion potential as closely as 0.3 volt. This may indicate a general difference between anaerobes and aerobes. Soils treated with excess of water became highly reducing as evidenced by their reduction potentials. At the same time their hydrogen-electrode potentials changed, the soils becoming less acid. The speed with which the soils became highly reducing varied with the soil, but the addition of 0.1 per cent of dextrose favored the development of reducing conditions. "Sourness" of soils includes more than acidity and this residual unfavorable quality may be a high intensity of reduction.—*W. J. Robbins.*

284. Keitt, T. E., and A. W. Murray. **A new method for rendering insoluble phosphates available.** Georgia Agric. Exp. Sta. Bull. 132: 47–58. (1919) 1920.—The work was undertaken to determine the influence of composting commercial organic ammoniates, ground rock phosphate and rich soil, on availability of phosphorus content of ground-rock phosphate and on loss of ammonia from organic ammoniate due to composting. Seven compost heaps were made, cottonseed meal being the source of ammonia. An attempt was made to maintain these heaps at 60 per cent of their maximum water-holding capacity. Heaps were covered to cut down oxygen supply and to reduce the temperature. The tables presented show that part of the phosphoric acid of raw rock-phosphate may be made available by composting with cottonseed meal, some being changed to a water soluble form.—*T. H. McHatton.*

285. Moore, G. T., and J. L. Karrer. **A subterranean algal flora.** Ann. Missouri Bot. Gard. 6: 281–307. 1919.

FERTILIZATION

286. Bear, F. E. **Adapting fertilizers to soils, farms, crops and climate.** Amer. Fertilizer 52^{13}: 72h. 1920.

287. Conrey, G. W. **Soils, soil characteristics and their relation to fertilizer requirements.** Amer. Fertilizer 52: 106–114. 1920.

288. Wenholz, H. **Soil improvement for maize. 1. Manures and fertilizers.** Agric. Gaz. New South Wales 31: 318–324. 1920.—Discusses potash and lime and residual effect of fertilizers.—*L. R. Waldron.*

289. Lewis, C. I., F. C. Reimer, and G. G. Brown. **Fertilizers for Oregon orchards.** Oregon Agric. Exp. Sta. Bull. 166. *48 p. 3 fig.* 1920.—See Bot. Absts. 6, Entry 124.

FERTILIZER RESOURCES

290. Bongiovanni, C. **Utilizzazione delle acque ammoniacali del gas come concime. [The utilization of ammoniacal waters, from the manufacture of gas, as fertilizer.]** Staz. Sper. Agr. Ital. 52: 521–523. 1919.—The description of a method for the preparation of a new fer-

tilizer by intimate contact of mineral superphosphates with ammoniacal waters in flat pans followed by evaporation. On mixing the two substances elimination of CO_2 occurs, interaction of ammonium carbonate and acid phosphate. The acidity of the perphosphate eliminates hydrocyanic acid and cyanides, which are generally contained in the ammoniacal waters. The resulting compound may have, according to the author, the following formula: $Ca(NH_4HPO_4)_2 + Ca((NH_4)_2PO_4)_2$. After drying the material is crushed and finally has the following characters: odorless, non hygroscopic and unalterable, containing 12.58 per cent P_2O_5 soluble in citrated water, 3 per cent nitrogen and 12.48 per cent moisture.—*A. Bonazzi.*

291. Dustman, R. B. **Solubility and availability.** Amer. Fertilizer 52[13]: 70–72. 1920.

292. Jenkins, E. H., and E. Monroe Bailey. **Fertilizer report for 1919.** Connecticut [New Haven] Agric. Exp. Sta. Bull. 217: 53–106. 1919.—Analyses of 339 brands of fertilizers offered for sale in the state are given.—*Henry Dorsey.*

293. Proulx, E. G. **Interpretation of guarantees and analysis.** Amer. Fertilizer 52[13]: 72d–72g. 1920.

294. Waguet, P. **A few notes upon chemical fertilizers.** Rev. Prod. Chim. 23: 207–210. 1920.—The world's production of phosphates is shown with a detailed account of the French phosphate resources and methods of preparing ammonium and tetra phosphate. Sources and composition of the world's potash deposits are also given.—*R. B. Deemer.*

INFLUENCE OF SALTS ON SOLUBILITY

295. McCool, M. M., and Millar, C. E. **Effect of calcium sulphate on the solubility of soils.** Jour. Agric. Res. 19: 47–54. 1920.—Six different soils were treated with a saturated solution of calcium sulfate. The rate of formation of soluble substances was determined by means of the freezing-point method. Whether the soil was used as it occurred in nature or whether soluble substances were first reduced to a minimum by washing with distilled water, the calcium sulfate treatment resulted in an increase in the rate of formation of soluble substances. "It seems that it is possible to alter the composition of the soil solution and that whether such changes will have any effect on plant growth or not or whether the effect will be favorable or unfavorable will depend upon the nature of the soil and of the substances added." —Tenth-normal calcium phosphate used in the same way decreased the rate of formation of soluble substances. When the two are used together the effects of calcium sulfate are counteracted to some extent.—From carbon dioxide determinations, it is concluded that the increase in the rate of formation of soluble substances brought about by treatment with calcium sulfate is due to something other than increased biological activity.—*D. Reddick.*

296. Kearney, Thomas H. **The relative absorption by the soil of sodium carbonate and sodium chloride.** Soil Sci. 9: 267–273. *1 fig.* 1920.—When equal volumes of equal concentrations of sodium carbonate and sodium chloride have been allowed to remain in contact with sand for several hours, the electrical resistance of the same indicates that more sodium carbonate than sodium chloride has been removed from solution. Conclusions that sodium carbonate is less toxic to plants than sodium chloride are due to failure to consider this fact.—*W. J. Robbins.*

297. Spurway, C. H. **The effect of fertilizer salts treatments on the composition of soil extracts.** Michigan Agric. Exp. Sta. Tech. Bull. 45. *18 p.* 1919.

MISCELLANEOUS

298. Bauer, F. C. **The effect of leaching on the availability of rock phosphate to corn.** Soil Sci. 9: 235–251. *2 pl., 2 fig.* 1920.—Corn was grown in quartz sand in pots to which rock phosphate or acid phosphate and a nutrient solution lacking phosphate were added. Some of the pots were frequently leached with the nutrient solution. Leaching increased the yield

of corn with rock phosphate but decreased it with acid phosphate. Leaching with a nutrient solution containing ammonium nitrate as the source of nitrogen increased the availability of the rock phosphate as measured by the phosphorus content of the plants. With sodium nitrate, this was not noted. The solution containing ammonium nitrate also removed more calcium in the drainage water than did the sodium nitrate. The effect of leaching in increasing the availability of rock phosphate is explained on the basis of the mass law.—*W. J. Robbins.*

299. Gain, Edmond, and André Gain. **Conditions thermiques du sol sous l'influence de la végétation locale.** [**Thermal conditions of the soil under the influence of local vegetation.**] Rev. Gén. Bot. [Paris] 32: 161–164. 1920. A series of measurements showing the degree to which vegetation of various kinds lowers the temperature of the soil at and below the surface. The cooling effect, brought about by the evaporation of water and shading from direct sunlight, varies, in meadows and cultivated fields, from less than 1° to more than 5°.—*L. W. Sharp.*

300. Mosséri, Victor M. **Note sur les dépôts Nilotiques des gazayers et saouahel d'Egypte.** [**Note upon the river deposits upon the islands and the flooded lands along the banks of the Nile in Egypt.**] Bull. Inst. d'Egypte 1: 151–180. 1919.—In accordance with the proportion of sand and clay which they contain, the deposits are classified as ramleh (sandy), safra (silico-argilaceous) and soda (argilaceous). On the first only water melons and other cucurbitous crops and barley are grown; the second produces barley and wheat; while the third for the first year, is either left fallow or is planted to berseem (*Trifolium alexandrinum*), which is sown in the mud without preparation; afterwards, it may produce any kind of crop. The *ramleh* and *safra* soils, being very permeable, give up their water very readily as the level of water recedes from the surface at the time of the low Nile. The *soda* (or clay) soils, on the other hand, hold the water much longer. However, when freshly deposited in thick layers it is almost impossible to prepare or cultivate them. In drying they crack enormously. Hence only plants with long tap roots (like berseem) are able to survive injuries caused by cracking and produce profitable crops. At the end of one year, after the fall of the succeeding flood, these soils have largely lost their objectionable features. Their fertility however, increases for several years, provided no new deposits of great thickness are made upon them. The defects of these soils are attributed to the large amount of colloidal clay which they contain. Among the causes for their gradual improvement, the author considers most important, the appearance in the soils of more concentrated solutions of electrolytes capable of coagulating the colloidal clay and thus permitting the loosening of the soil. This concentration of the soil solutions is due to the capillary rise of the subterranean water and its ultimate evaporation at the surface. The soluble salts of calcium, chiefly chloride, oppose the formation of carbonate of soda and prevent, by the aeration which they permit, the transformation into this carbonate of alkaline bicarbonates found so abundant in Egyptian soils, which transformation renders the soil more or less unproductive.—*Geo. F. Freeman.*

TAXONOMY OF VASCULAR PLANTS

J. M. Greenman, *Editor*
E. B. Payson, *Assistant Editor*

GENERAL

301. Anonymous. [Abstract of: **The Thirty-fourth Annual Report of the Watson Botanical Exchange Club for 1917–1918.**] Jour. Botany 57: 314–318. 1919.

302. Anonymous. [Rev. of: Farrer, Reginald. **The English rock garden.** *2 vol., 4to. lxiv + 504 and viii + 524 p., 102 pl.* T. C. & E. C. Jack: London and Edinburgh.] Jour. Botany 57: 354–357. 1919.—See Bot. Absts. 5, Entry 1792.

303. B., E. G. [Rev. of: Gamble, J. S. **Flora of the Presidency of Madras, Part III.** *P. 391–575.* Adlard & Son.] Jour. Botany 58: 27–28. 1920.

304. Britton, N. L. **Flora of the District of Columbia.** [Rev. of: Hitchcock, A. S. and P. C. Standley, with the assistance of the botanists of Washington. **Flora of the District of Columbia and vicinity.** Contrib. U. S. Nation. Herb. 21: 1–329. *42 pl.* 1919.] Torrey 19: 244–246. 1919.—See Bot. Absts. 4, Entry 1731.

305. Cheeseman, T. F. **Contributions to a fuller knowledge of the flora of New Zealand No. 6.** Trans. and Proc. New Zealand Inst. 51: 85–92. 1919.—See also Bot. Absts. 6, Entry 367.

306. Chiovenda, L. **Plantae e Catanga a Cl. Dr. H. Bovone lectae.** [**Plants from Catanga collected by Dr. H. Bovone.**] Nuovo Gior. Bot. Ital. 26: 58–85. 1919.—This paper contains a detailed Latin description of a number of plants and a list of others collected by Dr. H. Bovone at Catanga.—*Ernst Artschwager.*

307. Conard, Henry S. **The classification of vascular plants: a review.** Plant World 22: 59–71. 1919.—Certain discrepancies between the standard systematic and morphological texts are discussed, and a classification of the plant kingdom is proposed, which attempts to bring systematic botany into harmony with the most recent morphological discoveries that throw light on the relationships of the larger groups to one another.—*Charles A. Shull.*

308. Conard, H. S. **The general classification of higher plants.** Proc. Iowa Acad. Sci. 25: 237–240. 1920.—The author proposes to divide the plant kingdom into *Thallophyta* and *Embryophyta*, the latter group into *Atracheata* (*Bryophyta*) and *Tracheata* (*Vasculares*), the latter into *Lycopsida* and *Pteropsida*, and the last into *Aspermae* (*Filices*), *Gymnospermae* and *Angiospermae.*—*H. S. Conard.*

309. Coulter, J. M. **Flora of the Congo.** [Rev. of: Wildeman, E. de. **Florae Congolensis.** Bull. Jard. Bot. Bruxelles 4: 361–429. 1914. *Ibid.* 5: 1–108. 1915. *Ibid.* 5: 109–268. 1916. *Ibid.* 6: 1–129. *35 pl.* 1919. Bot. Gaz. 68: 232. 1919.

310. Engler, A. **Kurzer Bericht über in den letzten zehn Jahren von deutschen Botanikern unternommenen Forschungsexpeditionen nach Afrika und Papuasien. [Short report on the exploring expeditions in Africa and Papuasia undertaken by German botanists during the last ten years.]** Bot. Jahrb. 55 (Beiheft): 5–32. 1919.—A report read at the twelfth meeting of the "Freien Vereinigung der Systematischen Botaniker und Pflanzengeographen zu Würzburg," Aug., 1917.—(*I*) *Botanical exploring expeditions to West Africa.* (a) The expedition of C. Ledermann to North Kamerun and Adamaua. This expedition was absent about one year in 1908 and 1909. The number of collections reached 6492, and the geographical data obtained were extensive; the expedition therefore was very important for the region covered, which had been little visited before. In many cases collections made at the same place both in the wet and the dry season gave data not before at hand. (b) Expeditions of Dr. Mildbraed. Three trips were made; the first, from May, 1907, to September, 1908, was through Central Africa and the Congo Basin. The second, from June, 1910, to March, 1912, extended through the primitive forest from the mouth of the Congo to Kimuensa, Stanley Pool, Bolobo, Bongo and Sanaga, to Molundu and to the grasslands of the French border. Mildbraed finally visited the Island of Annobon where a fine collection of Algae was made. The third expedition, leaving October, 1913, was to New Kamerun. Many specimens were sent to Germany, and many others were prepared, but failed to reach that country on account of the war. —(*II*) *Explorations in East Africa.* (a) Explorations of Hans Meyer in Urundi and Ruanda. This expedition started May, 1911. It furnished little new material, as most of the region had been worked before. A report on this trip has already been made by Meyer. (b) A. Stolz in north Nyassaland, 1900–1912. His collections contain 2760 species and are on the market. He was not primarily a traveller but collected mostly in a few localities. (c) Brehmers' trip in Uluguru, 1913. This expedition was through a rain forest of dense vegetation. The region is described and it is stated that 1038 specimens were collected.—(*III*) *Explorations in Southwest Africa.* Trip of A. Engler, March–May, 1913. Accompanied by Dinter and

Runge, Engler travelled through the sandy deserts, rocky steppes, and bush growth of that region. Vivid descriptions of the vegetation are given.—*(IV) Explorations in Papuasia.* Dr. Lauterbach had collected there in 1890–91, 1896, 1899, and 1900. In 1907–09 came the Guttapercha-Caoutchouc Expedition of the Colonial Committee under Schlechter. From this trip Schlechter reported 116 genera and 1450 species of orchids, 348 of the latter being new. To be mentioned also is the Dutch expedition of Lorentz and Newbury in 1901, of which Versteeg was botanist; also the later German expedition of Leonhard Schultze Jena and Dr. Moskowski. A list is given of the collaborators who have worked on the Lauterbach and Schlechter material.—*K. M. Wiegand.*

311. Jeanpert, Ed. **Énumération des plantes recueillies par M. R. Chudeau dans le Soudan. [List of plants collected by M. R. Chudeau in the Soudan.]** Bull. Mus. Hist. Nat. [Paris] 25: 64–68. 1919.

312. Jeanpert, Ed. **Énumération de plantes de Macédoine. [Enumeration of plants of Macedonia.]** Bull. Mus. Hist. Nat. [Paris] 25: 391-397, 517–523. 1919.—In these, the first and second papers of a series, the author gives a list of species collected in Macedonia by several collectors with localities of each species when they are known.—*E. B. Payson.*

313. Knowlton, C. H., and Walter Deane. **Reports on the flora of the Boston District. —XXXII.** Rhodora 22: 72–75. 1920.—A continuation of the report of the Committee on Local Flora of the New England Botanical Club. Reported species and their distribution in the district about Boston, Massachusetts.—*James P. Poole.*

314. Pampanini, R. **L'Erbario di Paolo Boccone conservato a Lione. [The herbarium of Paolo Boccone at Lyon.]** Nuovo Gior. Bot. Ital. 26: 1–20. 1919.

315. Pampanini, R., and V. Zanon. **Nuovo contributi alla conoscenza della Flora della Cirenaica. [New contribution to the knowledge of the flora of Cirenaica.]** Nuovo Gior. Bot. Ital. 26: 205–221. 1919.—A list of vascular plants, fungi and lichens collected in Bengasi during 1917 and 1918, reported for the first time were the following: *Ephedra campylopoda* C. A. Mey., *Roemeria tenuifolia* Pamp., sp. n., *Ranunculus bullatus* L. var. *cyrenaicus* Pamp., var. n. *Linaria Haelava* Chav. var. *cyrenaica* Pamp., var. n.—*Ernst Artschwager.*

316. Pellegrin, François. **Les collections botaniques récoltées par la Mission de délimitation Congo Français-Cameroun. [The botanical collections made by the Congo French-Cameroun Mission of delimitation.]** Bull. Mus. Hist. Nat. [Paris] 25: 381–386, 506–511. 1919. —In continuation of a similar list previously published, the author gives a list of plants collected by the Mission with various notes concerning the species. *Mostuea Periquetii* is described as a species new to science.—*E. B. Payson.*

317. Schaffner, John H. **Additions to the catalog of Ohio vascular plants for 1919.** Ohio Jour. Sci. 20: 131–136. 1920.—A check list of 72 additions to the State Herbarium gives their local distribution, various changes in nomenclature and other corrections.—*H. D. Hooker, Jr.*

318. Schoolbred, W. A. **The flora of Chepstow.** *8vo. X + 140 p., 1 map.* Taylor and Francis: London, 1920.—The region covered by this flora is that of the lower part of the Valley of the Wye in South Wales and comprises approximately an area of 100 square miles. About 1000 species of flowering plants, ferns, and fern-allies are enumerated and 179 species of mosses supplement this list. The habitat of each species is carefully recorded, but there are no descriptions nor keys.—*J. M. Greenman.*

319. Sedgwick, L. J. **On the use of the term "variety" in systematics.** Jour. Indian Bot. 1: 120–124. 1919.—The author discusses the problem of "whether the term variety as used in our floras is applied to one natural phenomenon only," and if not, "whether there is any way of separating out the various phenomena hitherto confused under the one term,

and assigning to each a separate term." He points out the following different kinds of var ties, and suggests a nomenclature for each: freaks, to be described separately; geographi forms, the trinomial system; edaphic forms, "the term *varietas* followed by the ordin ecological term such as *xerophytica*, *halophytica*, etc.;" forms of varying life duration, "*var tas annua*, *biennia*, etc.;" seasonal forms, "*varietas hyemalis*, *aestivalis*, etc.;" pure lines a elementary species, "*varietas Mendeliana*, followed by the letters of the Greek alphabet forms of inconstant species and "DeVriesian mutants," "*forma* is the ultimate unit;" a hybrids, "the usual multiplication sign."—*Winfield Dudgeon.*

320. Wilson, E. H. **The Liukiu Islands and their ligneous vegetation.** Jour. Arnc Arboretum **1**: 171–186. 1920.

PTERIDOPHYTES

321. Bonaparte, R. **Les ptéridophytes de l'Indo-Chine. Première partie. [The Pter dophytes of Indo-China. Part I.]** Notes Pteridologiques **7**: 1–190. 1919.—This work contai an analytical key to the families of ferns and fern-allies, and a consideration of the Ind Chinese representatives of the families Hymenophyllaceae, Gleicheniaceae, Schizaeacea and Cyatheaceae, with descriptions of the genera and species, keys, and an extended citati of synonyms and specimens under each species. To the work is appended a list of the fer cultivated in the botanical garden at Saigon. No new forms are described.—*E. D. Merril*

322. Copeland, E. B. **A few new ferns from Mt. Bulusan.** Leafl. Philippine Bot. 9 3107–3111. 1920.—The following ferns from Luzon are described as new: *Davallia Elmer Dennstaedtia philippinensis*, *Cyathea bicolana*, *C. bulusanensis*, and *Athyrium ebenirachi* The genus *Haplodictyon* as proposed by Presl, long placed as a synonym of *Dryopteris*, is rein stated, and *H. majus* is described as new.—*E. D. Merrill.*

323. Dodge, Raynal. **Aspidium cristatum × marginale and A. simulatum.** Ame Fern Jour. **9**: 73–80. 1919.—See Bot. Absts. 5, Entry 353.

324. Fitzpatrick, T. J. **The fern flora of Nebraska. I.** Amer. Fern Jour. **10**: 5–1 1920.

325. Holloway, J. E. **Studies in the New Zealand species of the genus Lycopodium Part III. The plasticity of the species.** Trans. and Proc. New Zealand Inst. **51**: 161–261. *P 9–14, 16 fig.* 1919.—See Bot. Absts. 5, Entry 1892.

326. Hopkins, L. S. **A crested form of the Lady fern.** Amer. Fern Jour. **9**: 86–88. *Pl 4.* 1919.—In the summer of 1916 the author found near Windham, Ohio, a crested form o the Lady fern. He lifted the plant and has it growing at his home in Kent, Ohio. He sug gests the name *Athyrium angustum* var. *cristatum* var. nov. for this form.—*F. C. Anderson*

327. Leonard, Elizabeth J. **The genus Taenitis, with some notes on the remainin Taenitidenae.** Sci. Proc. Roy. Dublin Soc. **15**: 254–273. *1 pl.* 1918.—This genus comprises at present, but one species, *Taenitis blechnoides*, Willd. Related genera include *Eschato gramme*, *Drymoglossum*, *Paltonium* and *Hymenolepsis*. The author concludes that all, excep possibly *Paltonium*, are blechnoid derivatives.—*A. E. Waller.*

328. Lewis, Charles Smith. **The Woodsias of Quechee.** Amer. Fern Jour. **10**: 23–25 1920.

329. Maxon, William R. **Notes on American ferns. XIV.** Amer. Fern Jour. **9**: 67–73. 1919.—*Dicranopteris flexuosa* (Schrad.) Underw., the only known representative of the family Gleicheniaceae in the United States, found in 1914 growing near Delschamps Station in the Mobile Bay region of Alabama, is probably wiped out of existence by the railroad company removing the clay bank on which the fern grew. The locality data for *Athyrium americanum*

(Butters) Maxon is corrected. *Woodwardia Chamissoi* Brack and *W. spinulosa* Mart & Gal. are compared and the six main points of distinction are listed. *Notholaena limitanea* Maxon, sp. nov. and *N. limitanea mexicana* Maxon, subsp. nov. are described and localities listed. Distinctive characters of *N. dealbata* (Pursh) Kunze and *N. nivea* are also given.—*F. C. Anderson.*

330. Maxon, William R. **Notes on American ferns. XV.** Amer. Fern Jour. **10**: 1–4. 1920.—Of the five species discussed, the range for four of them is extended. One species, *Lycopodium alpinum* L., is new for the United States. On examining specimens from Glacier National Park it seems necessary to regard *Polystichum Jenningsi* Hopkins as a synonym of *P. Andersoni* Hopkins.—*F. C. Anderson.*

331. Praeger, R. Ll. **Asplenium adiantum-nigrum var. acutum.** Irish Nat. **28**: 13–19. *Pl. 2.* 1919.—A review of the literature shows that several forms have been confused. Two main types are here recognized and these are related to certain areas in Ireland and elsewhere. —*W. E. Praeger.*

332. Ridley, H. N. **The fern-allies and Characeae of the Malay Peninsula.** Jour. Roy. Asiatic Soc. Straits Branch **80**: 139–164. 1919.—A descriptive consideration of the groups indicated, *Lycopodium* with 13 species, *Psilotum* with 2, *Selaginella* with 37; *Azolla* with 1; *Marsilea* with 1; *Nitella* with 3, and *Chara* with 1. The following species of *Selaginella* are described as new: *S. Curtisii*, *S. selangorensis* Bedd., *S. calcarea*, *S. strigosa* Bedd., *S. pensile*, *S. microdendron*, *S. lankawiensis*, *S. cuprea*, *S. illustris*, *S. reptans*, *S. scabrida*, and *S. montana*. —*E. D. Merrill.*

SPERMATOPHYTES

333. Baker, E. G. **The African species of Allophylus.** Jour. Botany **57**: 154–160. 1919. —The genus *Allophylus* was founded by Linnaeus in 1747 in the Flora Zeylanica. Linnaeus also described *Schmidelia* in the Mantissa. These are now considered synonyms. In 1859–60 Sander gave under *Schmidelia* five species, and in 1868 the author's father described twelve species. In 1895 Radlkofer, in Engler and Prantl's Nat. Pflanzenf., mentions eighteen species in Africa and Madagascar. The present author criticises Radlkofer's primary division into unifoliate and trifoliate leaves, and his subsequent divisions on the basis of simple or branched thyrse. Gilg also has made important contributions to our knowledge of the genus. The author gives in this installment a key to the African species, following closely Radlkofer's sequence, with the recently described novelties interpolated. Notes on synonymy and distribution are given on 14 of the 73 species treated in the key. The following species are described as new: *Allophylus nigricans* from Nigeria, and *A. lasiopus* from Cameroons.—*K. M. Wiegand.*

334. Beccari, O. **The palms of the Philippine Islands.** Philippine Jour. Sci. **14**: 295–362. *3 pl.* 1919.

335. Beck v. Mannagetta, and G. Lerchenau. **Wacholderbeeren mit entblöszten Samen. [Juniper berries with exposed seeds.]** Sitzungsber. K. Akad. Wiss. Wien (Math.-Nat. Kl.) **126**: 403–419. *31 fig.* 1917.—See Bot. Absts. 4, Entry 983.

336. Bennett, Arthur. **× Potamogeton dualus Hagstrom (P. panormitanus Biv. × pusillus L.).** Jour. Botany **57**: 285. 1919.—A note on the occurrence of the hybrid in York and Shropshire; also the record of *P. panormitanus* from Ireland, as *P. pusillus* L. var. *tenuissimus* Koch.—*K. M. Wiegand.*

337. Benoist, R. **Description d'espèces nouvelles de Phanérogames de la Guyane Française. [Descriptions of new species of Phanerogams from French Guiana.]** Bull. Mus. Hist. Nat. [Paris] **25**: 296–299. 1919.—The following new species are described: *Capparis maroniensis*, *Andira Wachenheimi*, *Swartzia similis*, and *Helicostylis pedunculata*.—*E. B. Payson.*

338. Benoist, R. **Guenetia, genre nouveau de la famille de Tiliacées. [Guenetia, a new genus of the family Tiliaceae.]** Bull. Mus. Hist. Nat. [Paris] 25: 387–389. 1919.—The author publishes the genus **Guenetia** Sagot, with the single species, *G. macrosperma* Sagot, as new to science from French Guiana.—*E. B. Payson.*

339. Benoist, R. **Les Licania (Chrysobalanacèes) de la Guyane française. [The Licanias (Chrysobalanaceae) of French Guiana.]** Bull. Mus. Hist. Nat. [Paris] 25: 512 516. 1919.—The author presents a résumé of all the species of *Licania* known to occur in French Guiana. The following new species and varieties are characterized: *Licania heteromorpha* Benth. var. *grandifolia*, *L. davillaefolia*, *L. cyathodes*, *L. canescens*, *L. leptostachya* Benth. var. *crassifolia* (*L. crassifolia* Benth.), *L. galibica*, and *L. pruinosa.*—*E. B. Payson.*

340. Blake, S. F. **A preliminary revision of the North American and West Indian avocados (Persea spp.).** Jour. Washington [D. C.] Acad. Sci. 10: 9–21. *2 fig.* 1920.—A list of five species is given, of which two, *Persea cinerascens* and *P. leiogyna*, are described as new.—*Helen M. Gilkey.*

341. Blatter, E. **Flora Arabica, Part 1. Ranunculaceae-Moringaceae.** Rec. Bot. Surv. India 8: 1–123. 1919.—A systematic and bibliographic enumeration of all known Arabian plants of the families indicated following the Bentham and Hooker system. Specimens are cited and the distribution of each species is indicated. There are no keys or descriptions.—*E. D. Merrill.*

342. Blatter, E., P. F. Hallberg, and C. McCann. **Contributions toward a flora of Baluchistan.** Jour. Indian Bot. 1: 54–59. 1919. [To be continued.]—Notes on structure, synonymy and distribution are given of species in the following genera: *Clematis*, *Adonis*, *Ranunculus*, *Cocculus*, *Berberis*, *Hypecoum*, *Fumaria*, *Arabis*, *Barbarea*, *Farsetia*, *Malcolmia*, *Goldbachia*, *Sisymbrium*, *Brassica*, *Eruca*, *Capsella*, *Lepidium*, *Isatis*, *Physorhynchus*, *Cleome*, *Maerua*, *Capparis* and *Ochradenus*. The following species are described as new: *Ranunculus pseudomuricatus* Blatt. & Hall., *Goldbachia hispida* Blatt. & Hall., and *Cleome Hotsonii* Blatt. & Hall. Four species of *Farsetia* are listed without names. [See also next following Entry, 343.]—*K. M. Wiegand.*

343. Blatter, E., P. F. Hallberg, and C. McCann. **Contributions towards a flora of Baluchistan.** Jour. Indian Bot. 1: 84–91, 128–138, 169–178, 226–236, 263–270. 1919–1920.—A continuation of the flora, arranged according to Bentham and Hooker's system of classification, extending from Resedaceae to Euphorbiaceae. *Tamarix longe-pedunculata* and *Reaumuria panjgurica* (Tamaricaceae), *Fagonia spinosissima* and *Zygophyllum trialatum* (Zygophyllaceae), *Dorycnium villosum*, *Indigofera paucifolioides*, and *Calophaca tomentosa* (Leguminosae), and *Gaillonia macrantha* (Rubiaceae) are described as new species. [See also next preceding Entry, 342.]—*Winfield Dudgeon.*

344. Boulenger, G. A. **Some roses from Dorsetshire.** Jour. Botany 58: 16–21. 1920.—The paper contains notes made while spending a fortnight at Studland in 1919. Some forms could not be placed exactly in Major Wolley-Dod's summary of the knowledge of British roses. Extended notes are given on *R. ptychophylla*, *R. arvensis* var. *major* Coste, *R. arvensis* × *micrantha ?*, *R. canina* var. *oblonga* (two other varieties of *R. canina* are noted and keyed), and *R. micrantha* var. *Lusseri* (related to *R. rubiginosa*). Of these *R. ptychophylla*, a relative of *R. stylosa*, is described as new, and *R. canina* var. *oblonga* (Déségl. & Rip.) as a new combination.—*K. M. Wiegand.*

345. Breakwell, E. **A remarkable fodder plant. Shearman's clover (Trifolium fragiferum var.).** Agric. Gaz. New South Wales 31: 245–250. *4 fig.* 1920.—See Bot. Absts. 5, Entry 1109.

346. Breakwell, E. **Popular descriptions of grasses. The Chloris grasses.** Agric. Gaz. New South Wales 31: 309–314. *Fig. 1–4.* 1920.—See Bot. Absts. 6, Entry 6.

347. Britten, James. **Salsola caffra Sparrman.** Jour. Botany 58: 24. 1920.—This name, published in Sparrman's Voyage to the Cape of Good Hope in 1785, has not subsequently been recognized. It is synonymous with *S. aphylla* L. f. 1781.—*K. M. Wiegand.*

348. Britten, James. **Schrankia microphylla.** Jour. Botany 58: 89–90. 1920.—The author calls attention to the fact that J. F. Macbride has shown that *Schrankia microphylla* (Dryand.) Macbride must replace *S. angustata* Torr. & Gray. He notes that in 1898 he himself called attention to this but did not make the combination. Circumstances connected with the original publication of the specific name *microphylla* are somewhat confusing. The history of the name is outlined in detail, and it is shown that Solander, not Dryand., was the original author, though not the first to publish the name. *S. microphylla* (Dryand.) Macbride is *Mimosa uncinata* Dryand, *M. Intsia* Walt., and *S. angustata* T. & G.—*K. M. Wiegand.*

349. Brühl, P. **On the systematic position of Lindenbergia, Lehmann.** *6 p.* Printed privately: Calcutta, 1919.—The author has made a study of the aestivation of the corolla, the stamens, the fruit, and other characters of a number of Indian species of *Lindenbergia* and related genera of Scrophulariaceae. He concludes that *Lindenbergia* should be assigned to a position in the series Rhinantheae, either near the genus *Euphrasia*, or at the head of the series since it appears to be a connecting link with the tribe Gratioileae of the series Antirrhinideae. Pertinent literature is summarized.—*Winfield Dudgeon.*

350. Brühl, P. **Note on Lindenbergia urticifolia, Lehm. and Lindenbergia polyantha, Royle.** *20 p.* Printed privately: Calcutta, 1919.—The author concludes that *L. urticifolia* Lehm. and *L. polyantha* Royle are not reducible to a single species, but that on the basis of differences in aestivation, hairiness of the ovary and style base, and shape of the upper lip of the corolla, they constitute two well defined form groups, for which he proposes the old combinations *L. muraria* Roxb. and *L. indica* Linn. respectively. The former is essentially Himalayan while the latter belongs to the Indo-Gangetic Plain. A summary of the literature on the two species is given.—*Winfield Dudgeon.*

351. Burkill, I. H. **The Gardens' Hevea tree No. 1844.—H. confusa, Hemsl.** Gardens' Bull. Straits Settlements 2: 113–115. 1919.

352. Burkill, I. H. **Dioscorea kegeliana, Griseb., the "Yam poule" of the West Indies.** Gardens' Bull. Straits Settlements 2: 158. 1919.

353. Burns, W. **Variations in Bombay Strigas.** Jour. Indian Bot. 1: 212–216. *4 fig.* 1920.—The author records variations in the number of ribs of the calyx, flower color, and other characters in *Striga lutea*, *S. densiflora*, *S. euphrasioides*, and *S. orobanchoides* found in the Bombay Presidency.—*Winfield Dudgeon.*

354. Buscalioni, L., and G. Muscatello. **Studio monografico sulle Specie americane del Gen. Saurauia Willd.** [**Monograph of the American species of Saurauia.**] Malpighia 28: 371–402. 1919. [Continued from earlier numbers, and to be continued.]—This is a detailed study especially of the Mexican species of *Saurauia*, a genus of the Dilleniaceae. Tables are given comparing closely related species character by character. *Saurauia pseudopringlei* and *S. pseudopedunculata* are described in detail.—*L. W. Riddle.*

355. Calder, C. C. **The species of Oxalis now wild in India.** Rec. Bot. Surv. India 6: 325–341. *9 pl.* 1919.—Nine species are recognized, described, and figured. Synonyms are given and the distribution of each species indicated.—*E. D. Merrill.*

356. Calder, C. C. **A new Indian Vernonia.** Rec. Bot. Surv. India 6: 343–345. *Pl. 10.* 1919.—*Vernonia Fysoni* is described and figured.—*E. D. Merrill.*

357. Camus, Aimée. **Note sur le genre Mnesithea Kunth (Graminées). [Note on the genus Mnesithea Kunth (Gramineae).]** Bull. Mus. Hist. Nat. [Paris] **25**: 56–59. 1919.—The genus *Mnesithea* is confirmed and to it are transferred several species from southern Asia previously attached to the genera *Rottboellia* and *Ophiurus*. The three genera are contrasted and a key is provided for the species assigned to *Mnesithea*. The following new combinations result: *Mnesithea geminata* (*Rottboellia geminata* Hackel), *M. mollicoma* (*Rottboellia mollicoma* Hance), *M. merguensis* (*Rottboellia merguensis* Hook. f.).—*E. B. Payson.*

358. Camus, Aimée. **Note sur deux espèces nouvelles d'Andropogonées (Graminées) [Note on two new species of Andropogoneae (Gramineae).]** Bull. Mus. Hist. Nat. [Paris] **25**: 133–136. 1919.—*Cymbopogon Eberhardtii* and *C. Chevalieri*, native to Annam, are described as new to science.—*E. B. Payson.*

359. Camus, Aimée. **Graminées nouvelles de l'Asie orientale. [New Gramineae from eastern Asia.]** Bull. Mus. Hist. Nat. [Paris] **25**: 202–204. 1919.—The following species are described as new to science: *Tricholaena Chevalieri*, *Ischaemum Eberhardtii*, *Andropogon quinhonensis*.—*E. B. Payson.*

360. Camus, Aimée. **Quelques espèces nouvelles de Graminées d'Asie. [Several new species of Gramineae from Asia.]** Bull. Mus. Hist. Nat. [Paris] **25**: 284–287. 1919.—The following species are described as new to science: *Ischaemum tenuifolium*, *Lophopogon intermedius*, *Apocopis cochinchinensis* and *Germainia Thorelii*.—*E. B. Payson.*

361. Camus, Aimée. **Espèces et variétés nouvelles de Graminées asiatiques. [New species and varieties of Asiatic Gramineae.]** Bull. Mus. Hist. Nat. [Paris] **25**: 367–371. 1919.—The following species and varieties are described as new to science: *Isachne Chevalieri*, *Arundinella rupestris*, *A. setosa* Trin. var. *latifolia*, *Rottboellia tonkinensis*, *Andropogon pertusus* Willd. var. *barbatus*, and *Aristida Boisii*.—*E. B. Payson.*

362. Camus, Aimée. **Note sur le Lophatherum gracile Brongn. (Graminées.) [Note on Lophatherum gracile Brongn. (Gramineae.)]** Bull. Mus. Hist. Nat. [Paris] **25**: 494–496. 1919.—A group of closely related forms are here regarded as varieties of one polymorphic species. The following new varieties are characterized and new varietal combinations made: *Lophatherum gracile* Brongn. var. *genuinum* (*L. gracile* Brongn.), *L. gracile* Brongn. var. *multiflorum* (*L. multiflorum* Steudel.), *L. gracile* Brongn. var. *pilosum*, *L. gracile* Brongn. var. *hispidum*, *L. gracile* Brongn. var. *elatum* (*L. elatum* Zoll.), *L. gracile* Brongn. var. *intermedium*, *L. gracile* Brongn. var. *zeylanicum* (*L. zeylanicum* Hook. f.), *L. gracile* Brongn. var. *cochinchinense*.—*E. B. Payson.*

363. Camus, Aimée. **Variétés nouvelles de Graminées de l'Asie Orientale. [New varieties of grasses from eaatern Asia.]** Bull. Mus. Hist. Nat. [Paris] **25**: 497–498. 1919.—The following varieties are described as new to science: *Sorghum halepense* Pers. var. *mekongense*, *Erianthus fastigiatus* Nees var. *tonkinensis*, *Ischaemum aristatum* L. var. *lanuginosum*, *I. rugosum* Salisb. var. *nanum*, *Eragrostis* nigra Nees var. *cochinchinensis*, *E. amabilis* Wight & Arn. var. *ongiemensis*.—*E. B. Payson.*

364. Cardot, J. **Sur les charactères distinctifs des Eriobotrya (Rosacées) et genres voisins, et observations sur quelques espèces asiatiques d'Eriobotrya. [On the distinctive characters of Eriobotrya (Rosaceae) and related genera, and observations on a few Asiatic species of Eriobotrya.]** Bull. Mus. Hist. Nat. [Paris] **25**: 205–207. 1919.

365. Cardot, J. **Notes sur des espèces asiatiques du genre Photinia, section Euphotinia. [Notes on the Asiatic species of the genus Photinia, section Euphotinia.]** Bull. Mus. Hist. Nat. [Paris] **25**: 398–404. 1919.—Detailed notes are given concerning 13 species of *Photinia*. The following new combinations are made: *Photinia Davidiana* (*Stranvaesia Davidiana* Dcne.) and *P. undulata* (*Stranvaesia undulata* Dcne.).—*E. B. Payson.*

366. Carse, H. **A new variety of Pteris macilenta.** Trans. and Proc. New Zealand Inst. 51: 95. 1919.—*Pteris macilenta* A. Rich. var. *saxatilis* is described from Coromandel Peninsula, New Zealand.—*L. W. Riddle.*

367. Cheeseman, T. F. **Some additions to the New Zealand flora.** Trans. and Proc. New Zealand Inst. 51: 92–95. 1919.—Describes four new species of flowering plants; *Ligusticum petraeum, Veronica Birleyi, Earina aestivalis, Thelymitra aemula.—L. W. Riddle.*

368. Chermezon, H. **Un genre nouveau de Cypéracées.** [A new genus of the Cyperaceae.] Bull. Mus. Hist Nat. [Paris] 25: 60–63. 1919.—Mariscopsis is described as a genus new to science and to it is referred one species, *M. suaveolens* (*Cyperus suaveolens* Boivin mss.), from Madagascar and Zanzibar. The relation of the new genus to allied genera in this family is indicated by a dichotomous key.—*E. B. Payson.*

369. Chermezon, H. **Pycreus (Cypéracées) nouveaux de Madagascar.** [New species of Pycreus (Cyperaceae) from Madagascar.] Bull. Mus. Hist. Nat. [Paris] 25: 137–140. 1919.—The following species are described as new to science: *Pycreus squarrosulus, P. antsirabensis, P. vavavatensis, P. simulans, P. Alleizettei.—E. B. Payson.*

370. Chermezon, H. **Kyllingia (Cypéracées) nouveaux de Madagascar.** [New Kyllingias (Cyperaceae) from Madagascar.] Bull. Mus. Hist. Nat. [Paris] 25: 208–212. 1919.—The following new species are described: *Kyllingia coriacea, K. planiculmis* C. B. Clarke, *K. plurifoliata, K. imerinensis, K. Perrieri,* and *K. intricata.—E. B. Payson.*

371. Chermezon, H. **Mariscus (Cypéracées) nouveaux de Madagascar.** [New species of Mariscus (Cyperaceae) from Madagascar.] Bull. Mus. Hist. Nat. [Paris] 25: 300–304, 405–410 1919.—The following new species are described: *Mariscus detersus* C. B. Clarke, *M. Perrieri, M. goniobolbus, M. Aster* C. B. Clarke, *M. Humberti, M. Viguieri, M. fallax, M. splendens, M. manongarivensis, M. longibracteatus, M. rubrotinctus, M. varicus* C. B. Clarke, and *M. arcuato-reflexus.—E. B. Payson.*

372. Chiovenda, E. **L'Androsace Vandellii (Turra) Chiov.** Nuovo Gior. Bot. Ital. 26: 21–29. 1919.—Historical sketch of the treatment of the genus by Haller, Scleicher, Lamark and others. New classification with subdivision into three groups: *α. multiflora, β. tomentosa,* and *γ. argentea.—Ernst Artschwager.*

373. Chirtoiü, Marie. **Observations sur les Lacistéme et la situation systematique de ce genre.** [Observations on the species of Lacistema and the systematic position of this genus.] Bull. Soc. Bot. Genève 10: 317–349. *18 fig.* 1918.—*Lacistema*, the only genus of the family Lacistemaceae, is placed by Engler—"Die natürliche Pflanzenfamilien"—between the families Piperaceae and Salicaceae. Miss Chirtoiü places the genus *Lacistema* in a separate family between Violaceae and Flacourtiaceae. This change of classification was the result of a series of anatomical and morphological studies on various species of *Lacistema.* The glandular pubescence of *Piperus*, the multiple epidermis of *Piper* are not found in *Lacistema.* Calcium oxalate is abundant in the cortex of *Lacistema* but varies in the Piperaceae. The distribution of the vascular bundles in *Peperomia* and in *Piper* are monocotyledonous but in *Lacistema* dicotyledonous in distribution. In Piperaceae placentation is parietal but only apparently so in *Lacistema.* In *Lacistema* the flowers are hermaphrodite and the albumen is zygomorphic.—*W. H. Emig.*

374. Chirtoiü, Marie. **Remarques sur le Symplocos Klotzschii et les affinités des Symplocacées.** [Remarks on Symplocos Klotzschii and the affinities of Symplocaceae.] Bull. Soc. Bot. Genève 10: 350–361. *5 fig.* 1918.—The ovules of *Symplocos* have large integuments and a small nucellus. The integument develops with the appearance of the mother cell sporangia. The fruit is a kind of drupe at the beginning and the walls formed by the hypanthium become sclerified and surround one or two seeds with reduced albumen. The ovule possesses the

characteristic epithelium of most of the Gamopetalae. The Symplocaceae as related to the gamopetalous plants with the parietal type of placentation as found in the Cucurbitaceae.—*W. H. Emig.*

375. Cohen Stuart, C. P. **Le nom scientifique de la plante de thé. [The scientific name of the tea plant.]** Bull. Agric. Inst. Sci. Saigon 1: 350–361. 1919.—The author prefers the use of the binomial *Camellia theifera* (Griff.) Dyer, claiming that the binomial *Thea sinensis* Linn. is inexact.—*E. D. Merrill.*

376. Coker, W. C. **The distribution of Rhododendron catawbiense, with remarks on a new form.** Jour. Elisha Mitchell Sci. Soc. 35: 76–82. *Pl. 19–22.* 1919.—A map is given (*Pl. 22*) showing a much more extended range for *catawbiense* than heretofore supposed. A form of the species growing in central North Carolina at low elevations is described as forma *insularis.* The distribution of other species is also indicated in part.—*W. C. Coker.*

377. Conard, H. S. **The white water-lily of McGregor, Iowa.** Proc. Iowa Acad. Sci. 25: 235–236. *6 fig.* 1920.—Description of a water-lily found also in Clear Lake, Iowa, combining characteristics of *Nymphaea odorata* and *N. tuberosa*, and variable in respect to certain of these characteristics.—*H. S. Conard.*

378. Constantin, J. **Note sur le Lang-rhôa (Orchidée). [Note concerning the Lang-rhoa (Orchidaceae).]** Bull. Mus. Hist. Nat. [Paris] 25: 218–221. 1919.—The author is unable to identify a certain perfume plant from China with any species of *Cypripedium* known from that country and proposes the provisional name *Cypripedium lang-rhoa* for it. The specific name is taken from the Chinese name of the plant. No material has been seen and the provisional description is drawn from a photograph.—*E. B. Payson.*

379. Coulter, J. M. **North American flora.** [Rev. of: (1) Rydberg, P. A. **Psoraleae.** (2) Pennell, F. W. **Eysenhardtia.** North American Flora 24: Part 1. Apr., 1919.] Bot. Gaz. 68: 65. 1919.

380. Coulter, J. M. **Opuntia.** [Rev. of: Griffiths, David. **New and old species of Opuntia.** Bull. Torrey Bot. Club. 46: 195–206. *2 pl.* 1919. (See Bot. Absts. 3, Entry 1826.)] Bot. Gaz. 68: 312. 1919.

381. Coulter, J. M. [Rev. of: Valeton, Th. **New notes on the Zingiberaceae of Java and Malaya.** Bull. Jard. Bot. Buitenzorg. 27. *168 p., 30 pl.* 1918. (See Bot. Absts. 3, Entry 1322.)] Bot. Gaz. 68: 152. 1919.

382. Danguy, Paul. **Descriptions de quatre Méliacées de Madagascar. [Descriptions of four species of Meliaceae from Madagascar.]** Bull. Mus. Hist. Nat. [Paris] 25: 364–366. 1919.—The following new species are described: *Turraea Geayi, T. Decaryana, T. Humberti*, and *T. macrantha.—E. B. Payson.*

383. Daveau, J. **Ficus Saussreana et F. eriobotryoides Kunth et Bouché.** Rev. Hortic. Paris] 91: 389. 1919.—See Bot. Absts. 5, Entry 1809.

384. De Candolle, Casimir. **New species of Piper from Panama.** Smithsonian Misc. Coll. 71[6]: 1–17. 1920.—In this paper, based upon the collections of H. Pittier and W. R. Maxon, the following new species and varieties are described: *Piper minutispicum, P. sperdinum, P. chiriquinum, P. hirtellipetiolum, P. palmasanum, P. taboganum. P. persubulatum, P. latibracteum, P. pubistipulum, P. portobellense, P. obaldianum, P. dumeticola* var. *panamense, P. fatoanum, P. pallidibracteum, P. aduncum* L. var. *laevifolium, P. peracuminatum, P. davidianum, P. lucigaudens, P. erectamentum, P. colonense, P. villiramulum, P. hispidum* Sw. var. *gamboanum, P. tenuimucronatum, P. Chamissonis* Steud. var. *rubellibracteum, P. sambuanum, P. callibracteum, P. subnudibracteum, P. nitidifolium, P. garagaranum, P. Maxonii, P. magnantherum.—S. F. Blake.*

385. Dixon, Henry H. **Mahogany and the recognition of some of the different kinds by their microscopic characters.** Sci. Proc. Roy. Dublin Soc. **15**: 431–486. *22 pl.* 1918.

386. Doyle, Joseph. **Observations on the morphology of Larix leptolepsis.** Sci. Proc. Roy. Dublin Soc. **15**: 310–327. *2 pl.* 1918.—There is a distinct natural affinity between *Larix* and *Pseudotsuga*, not recognized in current systematic classifications.—*A. E. Waller.*

387. Drummond, J. R. **Miliusa and Saccopetalum.** Jour. Indian Bot. **1**: 162–168. 1920. —The history of the genera *Miliusa* and *Saccopetalum* (Anonaceae) is reviewed and the characters of the genera and certain species are discussed. The author reduces *Saccopetalum* to *Miliusa*, which he then redefines.—*Winfield Dudgeon.*

388. Dyer, William T. Thiselton. **Flora Capensis: being a systematic description of the plants of the Cape Colony, Caffraria, and Port Natal (and neighbouring territories).** *8vo, Vol. V, Sect II, Part III, p. 385–528.* L. Reeve & Co.: London, 1920.—The present part concludes the elaboration of the Euphorbiaceae by J. Hutchinson and D. Prain and continues with the Ulmaceae by N. E. Brown and the Moraceae by N. E. Brown and J. Hutchinson. The following new species and new combinations are included: *Drypetes natalensis* (*Cyclostemon natalense* Harv.), *D. arguta* (*Cyclostemon argutus* Müll. Arg.), *D. Gerrardii* Hutchinson (*Cyclostemon argutus* Sim., not Müll. Arg.), *Celtis Franksiae* N. E. Brown (*Celtis Soyauxii* Wood, not Engl.).—*J. M. Greenman.*

389. Eames, Edwin H. **Another exceptional specimen of Daucus Carota.** Rhodora **21**: 147–148. 1919.—An account of another specimen of a dark-flowered *Daucus Carota L.* (see Rhodora **21**: 70. 1919) collected at Bridgeport, Connecticut, Sept. 11, 1918, and now in the Gray Herbarium. In this plant the petals throughout all of the umbels were wholly dark purple. The plant bore several similar compound umbels and was normal in all respects except petal color. The article is concluded with a short discussion relative to abnormal flower-color in this species.—*James P. Poole.*

390. Earle, F. S. **Varieties of sugar cane in Porto Rico.** Jour. Dept. Agric. and Labor Porto Rico **3**: 15–55. 1919.—See Bot. Absts. 5, Entry 1133.

391. Elmer, A. D. E. **New woody plants from Mount Maquiling.** Leafl. Philippine Bot. **8**: 3069-3105. 1919.—This is article 121 of this publication and consists of the descriptions of new species of flowering plants as follows: *Papualthia Bakeri, Desmos elegans, Ilex apoensis* Elm. var. *punctata, Parsonsia magnifolia, Rhaphidophora lagunensis, R. stenophylla, R. trinervia, Heterostemma Herbertii, Toxocarpus rubricaulis, Capparis viridis, Vernonia acuminatissima, Erycibe Copelandii, Weinmannia luzonensis* Vid. var. *puberula, Dillenia reifferschiedia* F.-Vill. var. *rosea, Elaeocarpus maquilingensis, Antidesma fusicarpum, Glochidion canescens, Casearia Zschokkei, Cyrtandra maquilingensis, Cratoxylon arboreum, Gomphostemma cinereum, Derris canescens, Spatholobus sanguineus, Viscum loranthi, Melastoma Holmani, Astronia Merrillii, A. Foxworthyi, A. maquilingensis, Dysoxylum testaceum, Ficus maquilingensis, Eugenia Silvestrei, E. subsulcata, E. maquilingensis, Freycinetia robusta, F. subflagellata, Plectronia Mabesae, Neonauclea Kobbei, Pegia philippinensis, Lepisanthes perviridis, Palaquium montanum, Leea pauciflora*, and *Leea luzonensis.*—*E. D. Merrill.*

392. Évrard, F. **Un Alangium (Cornacees) nouveau d'Indo-chine. [A new Alangium (Cornaceae) from Indo-China.]** Bull. Mus. Hist. Nat. [Paris] **25**: 524–525. *1 fig.* 1919.—*Alangium decipiens*, a species new to science, is described and illustrated.—*E. B. Payson.*

393. Farwell, Oliver A. **Tsuga americana (Mill.) Farwell, a final word.** Rhodora **21**: 108–109. 1919.—In a previous paper (Bull. Torrey Bot. Club **41**: 621–629. 1914.), the present writer published the name of our common northern hemlock as *Tsuga americana* (Mill.) Farwell. In a later paper (Rhodora **20**: 185–188. 1918), Ivar Tidestrom criticised this new combination, arguing for the retention of the name *Tsuga canadensis* (L.) Carr., and giving

the evidence which he claimed supported his contention. This paper is in answer to the latter and attempts to show wherein Mr. Tidestrom's arguments are not convincing.—*James P. Poole.*

394. Farwell, Oliver Atkins. **Necessary changes in botanical nomenclature.** Rhodora 21: 101–103. 1919.—The Index Kewensis refers *Populus balsamifera* Miller to *P. deltoides* and *P. heterophylla*, but the writer finds that a careful comparison of Miller's description with Linnaeus's description of *P. balsamifera* shows the two to be identical and therefore *P. balsamifera* Miller should be referred to *P balsamifera* L., and that this binomial belongs to the Carolina Poplar, as usually understood, since in the last analysis the Linnaean species is founded on that of Catesby who described this Carolina species. The writer also maintains that the common Balm of Gilead should be *P. tacamahacca* Miller instead of Aiton since it was first published by the former author. A form of the latter with scanty pubescence he published as var. *Michauxii* (Henry) n. comb., and another form generally without cordate leaves and pubescence, as var. *lanceolata* (Marsh) n. comb. This last is the northern Balsam Poplar that has so generally been known as *P. balsamifera*. The new combination is in accordance with priority. *Veronica persica* Poir. is taken up instead of *V. Tournefortii* for the species long known as *V. Buxbaumii*. The reasons for the change are given with the bibliography involved. *Viburnum Opulus* Linn., var. *americanum* (Mill.) Ait. In Rhodora 20: 14–15. 1918, S. F. Blake gives his reasons for dropping the "(Mill.)" from the authority for this variety and retaining only "Ait." The writer maintains that Blake's argument was erroneously drawn and gives his reason for retaining Miller as an authority.—*James P. Poole.*

395. Fawcett, William, and A. B. Rendle. **Notes on Jamaica plants.** (Continued.) Jour. Botany 57: 312–314. 1919.—Euphorbiaceae. II. Notes are presented on the genera *Mettenia, Dendrocousinsia* and *Acalypha*. The following species and varieties are described as new: *Chaetocarpus cubensis, Dendrocousinsia alpina* and *Acalypha virgata* L. var. *pubescens*. *Chaetocarpus globosus* (*Mettenia globosus* Griseb.) is a new combination proposed.—*K. M. Wiegand.*

396. Fernald, M. L. **Panicum § Capillaria in New England.** Rhodora 21: 110–114. 1919.—Not being able to reconcile the New England plants of the section *Capillaria* with the treatment published by Hitchcock and Chase in their "North American Species of Panicum," the writer found it desirable to study these plants from a new standpoint. The authors mentioned thrust all the eastern *P. barbipulvinatum* Nash into *P. capillare* and forced much of the northwestern *P. capillare* into *P. barbipulvinatum*. The writer points out that the characters relied upon by Hitchcock and Chase for the separation of these two species do not hold up under the critical examination of the series of specimens in the Gray Herbarium and the herbarium of the New England Botanical Club. He points out other characters of the panicle and of the general habit which serve as a better basis of distinction, but even these are not constant, and the writer, in common with Rydberg, considers that *P. barbipulvinatum* is much better treated as a variety of *P. capillare* than as a distinct species. As a variety it should be called *P. capillare* var. *occidentale* Rydberg. In this study it was also found that the common indigenous species of the river- and lake-shores of most of New England had been merged with the strikingly dissimilar *P. philadelphicum* Bernh., whereas this plant is distinguished at once from *P. capillare* (including *P. barbipulvinatum*) and *P. philadelphicum* by having strictly glabrous pulvini while the latter species have the pulvini obviously hispid. The type sheet of this indigenous New England species was collected by Tuckerman and indicated by him on his herbarium label as a new species, *P. soboliferum*. This name has twice been published in synonymy but was never published by Tuckerman himself. The writer considers it better to allow Tuckerman's name to lapse and to use a name which will be open to no question, and therefore proposes for this species *P. Tuckermani* n. sp. A key is given for the species under consideration. The bibliography and distribution of the established species are given, and for the new species the description, list of characteristic specimens, and the distribution.—*James P. Poole.*

397. Fernald, M. L. **Rubus idaeus and some of its variations in North America.** Rhodora 21: 89–98. 1919.—A discussion presenting new evidence as to the status of *R. idaeus* and its varieties, especially those in North America. Descriptions of the varieties are given in considerable detail, their synonyms as given by various authors are discussed, the varieties are contrasted with each other and with the typical *R. idaeus*, and their distribution is given. By neither Focke nor Rydberg was *R. idaeus* (typical) admitted as more than an introduced plant in North America, but the writer presents evidence of it being indigenous on the Magdalen Islands, in Minnesota, North and South Dakota, and presumably elsewhere. A key to the variations of this species in eastern America is given with the bibliography and distribution of each. A bibliography of the species confined to western America is also given.—*James P. Poole.*

398. Fernald, M. L. **Bidens connata Muhl., var. gracillipes, n. var.** Rhodora 21: 103–104. 1919.—The writer gives a description of this new variety, also a list of characteristic specimens and the stations where they were collected, the latter all located on Cape Cod. A comparison of this variety with the somewhat similar *B. connata* var. *petiolata* (Nutt.) Farwell, and with the typical *B. connata*, is also given.—*James P. Poole.*

399. Fernald, M. L. **Two new Myriophyllums and a species new to the United States.** Rhodora 21: 120–124. 1919.—Description, distribution, and bibliography of *Myriophyllum exalbescens* n. sp. This species has heretofore passed as *M. spicatum* L. in America. The writer points out, however, several differences between the latter species, which is of Eurasia, and the American plant. Description, distribution, and bibliography of *M. magdalense* n. sp. This species which occurs in the Magdalen Islands is like *M. exalbescens* in foliage and in the whitening of the stem upon drying, but is proposed as a new species because the fruit is so unlike that in the latter species. Other points of difference are noted. In the Gray Herbarium among the various species which have been erroneously called by their collectors *Myriophyllum verticillatum*, the writer found a sheet from Farewell Bend, Crook Co., Oregon, collected in July, 1894, by J. B. Leiberg (no. 465) which proved to be a well known species of the southern hemisphere, *M. elatinoides* Gaudichaud., one of a group of species confined to southern Australia, Tasmania and New Zealand, and America, but not known in Africa or Eurasia. It has never before been reported north of Mexico, but a foot-note to the writer's article states that since this article went into type a sheet has been received from Prof. Morton E. Peck, collected in Des Chutes River, Oregon, July 27, 1914 (*Peck* no. 5718).—*James P. Poole.*

400. Fernald, M. L. **A new Polygonum from southeastern Massachusetts.** Rhodora 21: 140–142. 1919.—While exploring the ponds of Plymouth, Massachusetts, in 1913, the author noted a strictly indigenous annual *Polygonum* of the sandy pond-margins which was obviously related to *P. Persicaria* L. but which had more slender and more richly colored spikes. In explorations made in 1918 the plant was found to be universally distributed on Cape Cod, and everywhere a plant strictly of the pond margins, while *P. Persicaria* was naturally abundant near houses and about the farms. The indigenous species held its own peculiar differences with constancy, and more detailed study in the herbarium brought out other points of difference which justify the description of this plant as *Polygonum puritanorum* n. sp. The description and the distribution of the species are given, with comments on the relationship with, and the distinguishing differences between this and allied species.—*James P. Poole.*

401. Fernald, M. L. **The identity of Angelica lucida.** Rhodora 21: 144–147. 1919.—*Angelica lucida* was described by Cornut in his "History of Canadian Plants" in 1635. It was soon cultivated in various gardens of Europe, described in numerous works of the 18th century, and was taken up by Linneus in the "Species Plantarum" (1753) as a valid species under Cornut's original name. The species was accepted by post-Linnean authors but after 1840, when Torrey and Gray cast a doubt upon it, the plant was omitted from most subsequent treatments of the American flora. Subsequently to the publication of the statement by Torrey and Gray, however, Dr. Gray had for a time surmised that the seashore *Angelica*

of northeastern America now passing as *Coelopleurum actaeifolium*, was *Angelica lucida*, and in the 2nd edition of the Manual, at the end of the account of *Archangelica peregrina*, is the note: "Perhaps it is the *Angelica lucida* L." In the 5th edition (1867), however, the plant was formally taken up as *Archangelica Gmelini* DC., while in Watson and Coulter's revision (ed. 6) it became *Coelopleurum Gmelini* Lebed. The writer finds from familiarity with the plant in the field, and from a comparison of sheets collected in eastern Canada, with Cornut's plate, that the latter author's *Angelica lucida*, published in 1635, actually was of Canadian origin, and that he illustrated a very characteristic small specimen of the species which has recently passed as *Coelopluerum actaeifolium* (Michx.) Coulter & Rose. The plant is, then, reinstated and should hereafter be called *Coelopleurum lucidum* (L.) n. comb. The synonymy and the distribution of the plant are given. A plant differing, in the characters of the involucels, from the typical species is also described as *C. lucidum*, forma *frondosum*, n. f., and the stations where it is known to occur are given.—*James P. Poole.*

402. Fernald, M. L. **The variations of Ranunculus repens.** Rhodora 21: 169. 1919.—The writer gives a brief key to the more pronounced varieties of *Ranunculus repens* L.—*James P. Poole.*

403. Fernald, M. L. **Coreopsis rosea Nutt., forma leucantha, n. f.** Rhodora 21: 171. 1919.—At Buck Pond, Harwich, Mass., in August, 1918, where the ordinary pink form of *Coreopsis rosea* makes a border of color at the margin of the pond, the writer found a milk-white form also abundant, for which he proposes the above name.—*James P. Poole.*

404. Fernald, M. L. **The white-flowered bird's eye primrose.** Rhodora 21: 148. 1919. —The white-flowered form of *Primula mistassinica* Michx. which is occasionally seen, is very abundant in Newfoundland, often being the only color seen. Because of its strong contrast with the typical form of the species, the author designates it: *Primula mistassinica* Michx., forma *leucantha*, n. f. The type specimen was collected on the borders of ponds on the limestone tableland, alt. 200–300 m., Table Mountain, Port à Port Bay.—*James P. Poole.*

405. Fyson, P. F. **The Indian species of Eriocaulon.** Jour. Indian Bot. 1: 49–53. *13 fig.* 1919.—The author presents a synopsis of the groups of *Eriocaulon* occurring in India preliminary to a full revision of the genus soon to be published. He finds that previous authors have failed to note the natural groups; and that Ruhland's treatment in "Das Pflanzenreich" is especially artificial. The characters heretofore used have been largely ecological or otherwise unessential. Eight groups are given, as follows: (I) *Simplicis*, 19 sp., (II) *Setaceum*, 2 sp., (III) *Hirsutae*, 6 sp., (IV) *Anisopetalae*, 6 sp., (V) *Scariosae*, 3 sp., (VI) *Cristato-sepalae*, 8 sp., (VII) *Connato-sepalae* (not in India), (VIII) *Leucantherae*, 6 sp. The species in each group are listed by name but not described; thus eleven new species are named without descriptions. These are as follows: *E. Geoffreyi*, *E. barba-caprae*, *E. roseum*, *E. Dianae*, *E. Sedgwickii*, *E. Rhodae*, *E. Edwardii*, *E. Margaretae*, *E. Eleanorae*, *E. Thomasi*, *E. horsley-kundae*. Much confusion as to the range of species has arisen through faulty understanding of the characters and specific limits. An interesting parallel evolutionary development in several groups is noted and discussed.—*K. M. Wiegand.*

406. Fyson, P. F. **Short notes on distribution, etc.** Jour. Indian Bot. 1: 125–127. *1 fig.* 1919.—A new locality is recorded in India for *Impatiens tangachee* Bedd. The collection is recorded of two blue-flowered plants, identical in other characters with *Heterocarpus glaber* Wight and *H. hirsutus* Wight, species described as having yellow flowers. Apparently *H. glaber* and *H. hirsutus* have yellow flowers at lower altitudes, and blue flowers at higher altitudes, and represent a glabrous and a hairy variety of a single species. It is suggested that in these four plants there are "two pairs of Mendelian allelomorphs segregating." The author found a staminate flower on a carpellate tree of *Hydnocarpus alpinus* Wtk., and calls brief attention to its possible bearing on the problem of sex in flowering plants.—*Winfield Dudgeon.*

407. Gagnepain, F. **Vernonia nouveaux d'Indo-Chine.** [New Vernonias from Indo-China.] Bull. Mus. Hist. Nat. [Paris] 25: 487–493. 1919.—The following species are characterized as new to science: *Vernonia Balansae, V. Bonapartei, V. Chevalieri, V. Eberhardtii, V. macrachaenia, V. Pierrei, V. Principis, V. saigonensis, V. subacualis, V. Thorelii, V. tonkinensis,* and *V. virgata.*—*E. B. Payson.*

408. Gagnepain, F. **Nouveaux Begonia d'Asie; quelques synonymes.** [New Begonias from Asia; a few synonyms.] Bull. Mus. Hist. Nat. [Paris] 25: 194–201, 276–283. *19 fig.* 1919.—The following new species, new names and new specific combinations are proposed: *Begonia Balansaeana, B. baviensis, B. Boisiana, B. Bonii, B. Delavayi, B. Duclouxii, B. Eberhardtii, B. Geoffrayi, B. Harmandii, B. hymenophylla, B. Lecomtei, B. Pierrei, B. siamensis, B. taliensis, B. tonkinensis, B. Wilsonii, B. salziensis* (*Meziera salaziensis* Gaud.), *B. Decaisneana* (*B. aptera* Decne.) and *B. Hayatae* (*B. aptera* Hayata).—*E. B. Payson.*

409. Gagnepain, F. **Acareosperma, un genre nouveau d'Ampélidacées.** [Acareosperma, a new genus of the Ampelidaceae.] Bull. Mus. Hist. Nat. [Paris] 25: 131–132. 1919.—*Acareosperma Spireanum* from southern Asia is described as a new species and the type of a new genus.—*E. B. Payson.*

410. Gagnepain, F. **Quelques Passifloracées nouvelles ou critiques des genres Adenia et Passiflora.** [Some new or critical species of the Passifloraceous genera Adenia and Passiflora.] Bull. Mus. Hist. Nat. [Paris] 25: 126–130. 1919.—The following species and varieties from southern Asia are characterized as new to science: *Adenia Chevalieri, A. Harmandii, A. parvifolia, A. Pierrei, Passiflora octandra, P. octandra* var. *cochinchinensis, P. octandra* var. *attopensis, P. octandra* var. *glaberrima.*—*E. B. Payson.*

411. Godfery, M. J. **The problem of the British marsh orchids.** Jour. Botany 57: 137–142. 1919.—Are there two or three species of British bog orchids, and are all other forms hybrids of these three? Is *O. praetermissa* Druce a valid species or a hybrid? Is *O. latifolia* a good species or is it mainly *O. praetermissa?* The paper deals with these questions, but without finding their solution. The author considers in detail the value of characters, especially the spotting of the leaves. Mr. Rolfe's contention that *O. praetermissa* is true *O. latifolia* is discussed at length. The author has seen *O. latifolia* in many parts of Europe where *O. praetermissa* is not found. He concludes that while there is no doubt that *O. praetermissa* is the *O. latifolia* of English authors, it is open to question whether it is *O. latifolia* L. as understood on the Continent. Most of the spotted European orchids are sometimes found without spots. Mr. McKechnie has suggested that ring-spotted *latifolia* was originally a hybrid between *maculata* and *praetermissa.* The behavior of other orchid hybrids is compared with this case. All evidence goes to show that when spotted *maculata* is crossed with an unspotted species, the offspring is not spotted. The problems arising here are classified by the author. Two main problems, and seven special points should receive investigation. Hope is expressed that botanists will make some artificial crosses with these parents. It is suggested that soil be used in which the parent grew, as an organism (*Rhizoctonia*) is necessary in order that the seeds may germinate. (See F. E. Weiss, on Seeds and Seedlings of Orchids, Proc. Manchester Microsc. Soc. 1917).—*K. M. Wiegand.*

412. Guérin, P. [Rev. of: Berger, Marie-Gaston. **Étude organographique, anatomique et pharmacologique de la famille des Turnéracées.** (**Organographic, anatomic and pharmacologic study of the family Turneraceae.**) *270 p. 53 pl.* Vigot Frères: Paris, 1919.] Bull. Sci. Pharm. 26: 533. 1919.—See Bot. Absts. 5, Entry 805.

413. Guillaumin, A. **Contribution à la flore de la Nouvelle-Calédonia.** [Contribution to the flora of New Caledonia.] Bull. Mus. Hist. Nat. [Paris] 25: 213–217, 288–295. 372–378, 499–505. 1919.—In continuation of previous similar articles, the author publishes in these several papers lists of species collected in New Caledonia by various collectors. Critical notes are included and some citation of synonymy. The following new specific diagnoses and new

combinations occur: *Pittosporum dzumacense*, *Psychotria microglossa* Baill. (*Uragoga microglossa* Baill.), *Chrysophyllum Francii* Guillaum. & Dubard, and *Calycorectes ovigerus* (*Eugenia ovigera* Brong. & Gris.).—*E. B. Payson.*

414. Heribert-Nilsson, Nils. **Experimentelle Studien über Variabilität, Spaltung, Artbildung und Evolution in der Gattung Salix. [Experimental studies on variability, division, species-formation and evolution in the genus Salix.]** Acta Univ. Lund [Acta Reg. Soc. Physiog. Lund N. S. 29[II]. No. 28.] N. S. **14** (Avd. 2[28]): 1–145. 1918.—This is an extensive account of experimental studies in *Salix*. Many hybrids are designated, described and illustrated. No new species are described.—*E. B. Payson.*

415. Hitchcock, A. S. **History of the Mexican grass, Ixophorus unisetus.** Jour. Washington [D. C.] Acad. Sci. **9**: 546–551. 1919.—The nomenclatorial history of this species, which has previously been described under five different specific names and referred to four genera, is reviewed and its synonymy cited.—*Helen M. Gilkey.*

416. Hole, R. S. **A new species of Tamarix.** Indian Forester **45**: 247–249. 1919.—*Tamarix Troupii* is the name given to a new species found in the United Provinces, briefly described here.—*E. N. Munns.*

417. Hopkins, L. S. **The occurrence and distribution of Vasey's pondweed in Northeastern Ohio.** Torreya **19**: 243–244. 1919.—*Potamotgeton Vaseyi* Robbins was first collected in Ohio by the writer at Brady's Lake, Portage County, June 22, 1912. It has since been found in Ashtabula County in 1918, and at Sandy Lake, Portage County in 1919. It is not included in Schaffner's "Ohio Catalogue of Vascular Plants." The descriptions in the current manuals are corrected as follows: (1) Fruiting stems are not rare, (2) the larger leaves do not always float, (3) fruiting stems are not limited to shallow water.—*J. C. Nelson.*

418. Jackson, A. B., and A. J. Wilmott. **Barbarea rivularis in Britain.** Jour. Botany **57**: 304–306. 1919.—This paper is a reply to one by Marshall (Jour. Botany **57**: 211. 1919). Marshall was in error in recording *B. rivularis* as new to Britain. It was shown (Jour. Botany **54**: 202. 1916) that *B. rivularis* is *B. vulgaris* var. *silvestris* Fr., a form not uncommon in Britain. The length of the silique in these various forms, and in a specimen sent to the authors by Marshall, is discussed. The strict-fruited form of *B. vulgaris* has frequently been confused with *B. stricta*, but they can scarcely be confused by one who knows them in the field. Marshall has overlooked the important contribution by Sprague and Hutchinson (Jour. Botany **46**: 106. 1908) where the two forms are clearly differentiated. The shape and size of the lateral lobe of the leaf is of minor importance. Syme may have confused *B. stricta* and *B. rivularis*, as Marshall says, but this is uncertain.—*K. M. Wiegand.*

419. Jauch, Berthe. **Quelques points de l'anatomie et de la biologie des Polygalacées. [Certain details of the anatomy and biology of Polygalaceae.]** Bull. Soc. Bot. Genève **10**: 47–84. *15 fig.* 1918.—A study of *Polygala Chamaebuxus* and closely related species leads the author to consider the family Xanthophyllaceae of Gagnepain as untenable. *Xanthophyllum* is retained, as indicated by Chodat, in the family *Polygalaceae* because of the structure of the flower and the characteristic pollen. The stamens of Polygalaceae are four-celled, but by reduction of the inferior cells a type with two or three cells may be obtained. The four-celled type is the more primitive. The ovules of Polygalaceae receive parietal vascular bundles. The ovary is divided into two cells by a wall and the placentation is parietal although apparently axillary.—*W. H. Emig.*

420. Lam, H. J. **The Verbenaceae of the Malayan Archipelago, together with those from the Malayan Peninsula, the Philippines, the Bismark-Archipelago, and the Palau- and Caroline Islands.** *371 p., 3 pl.* Groningen, March 31, 1919. [Doctorate Dissertation.]—This work represents a critical revision of the family based on a study of collections in the herbaria of Leiden, Utrecht, and Berlin. Keys for determination and descriptions are given for 28 genera

and 305 species. Two genera and 31 species are described as new to science. The new genera are Xerocarpa, monotypic from New Guinea, and Viticipremna from the Philippines, New Guinea, and other islands, both of the tribe *Viticoideae*, the first of the subtribe *Teysmanniodendreae*, the second of the subtribe *Viticeae*. New species are: *Callicarpa glabra*, *C. lacinata*, *Clerodendron albiflos*, *C. coccineum*, *C. kalaotoense*, *C. macrocalyx*, *C. membranifolium*, *Faradaya nervosa*, *F. squamata*, *Geunsia Pullei*, *Gmelina Ledermanni*, *G. palawensis*, *G. Schlechteri*, *Premna alba*, *P. angustiflora*, *P. angustifolia*, *P. borneensis*, *P. Curranii*, *P. Ledermanni*, *P. macrophylla*, *P. paulobarbata*, *P. Peekelii*, *P. regularis*, *P. Ruttenii*, *P. sessilifolia*, *Vitex Curranii*, *V. glandulosa*, *V. luteoglandulosa*, *V. macrophylla*, *V. Merrillii*, *Xerocarpa avicenniaefoliola*. A supplement from the Buitenzorg herbarium will soon follow. [See Bot. Absts. 3, Entry 1830.]—*H. J. Lam.*

421. Lecomte, Henri. **Sapotacées recueillies à Madagascar par M. Perrier de la Bathie.** [**Sapotaceous plants collected in Madagascar by M. Perrier de la Bathie.**] Bull. Mus. Hist. Nat. [Paris] **25**: 269–275. *3 fig.* 1919.—In addition to several species previously known the following species and varieties new to science were collected: *Sideroxylon Perrieri*, *S. Perrieri* var. *oblongifolium*, *S. saxorum*, *S. collinum*, and *S. madagascariense*.—*E. B. Payson.*

422. Lecomte, Henri. **Quelques Sapotacées Africaines.** [Several African Sapotaceae.] Bull. Mus. Hist. Nat. [Paris] **25**: 189–193. *7 fig.* 1919.—The genus *Pachystela* is believed to contain two sections, *Eupachystela* and *Zeyherella*, which are here defined. The following new combination is made and new species described: *Pachystela Antunesii* (Engl.) H. Lec. (*Chrysophyllum Antunesii* Engl.) and *P. Pobeguiniana* Pierre.—*E. B. Payson.*

423. Lecomte, Henri. **À propos du genre Planchonella Pierre de la famille des Sapotacées.** [**In regard to the genus Planchonella Pierre of the family Sapotaceae.**] Bull. Mus. Hist. Nat. [Paris] **25**: 123–125. 1919.—*Planchonella* is considered to be worthy only of sectional rank under the genus *Sideroxylon* but *Sersalisia* which is similar in fruit characters is held to be distinct from *Sideroxylon* for other reasons. The following new combination is suggested: *Sideroxylon racemosum* (*Planchonella racemosa* Pierre).—*E. B. Payson.*

424. Lecomte, Henri. **Un Labourdonnaisia nouveau (Sapotacées) de Madagascar.** [**A new Labourdonnaisia (Sapotaceae) from Madagascar.**] Bull. Mus. Hist. Nat. [Paris] **25**: 53–55. 1919.—*Labourdonnaisia hexandra* is described as new to science and there is given a brief characterization of the other known species of this genus.—*E. B. Payson.*

425. Léveillé, H. **Souvenir de guerre.** [**War recollection.**] Bull. Geog. Bot. **1918**: 143–145. 1918.—*Fumaria graminifolia*, *Anacyclus Duguei*, *Artemisia Duguei*, *Convolvulus Duguei*, and *Ornithogalum Duguei* are described as new species. *Ononis Natrix* L. var. *integrifolia* is described as a new variety. The forms new to science are described from southeastern Europe. The paper also includes a list of recognized phanerogamic species from the same region.—*J. R. Schramm.*

426. Long, Bayard. **Notes on the American occurrence of Crepis biennis.** Rhodora **21**: 209–214. 1919.—See Bot. Absts. 4, Entry 347.

427. Long, Bayard. **The specific characters of Eragrostis peregrina and its two allies.** Rhodora **21**: 133–140. 1919.—Hackel based his *Eragrostis pilosa* var. *condensa* upon a weed occurring in the Grand-Ducal Palace Garden at Karlsruhe. When K. M. Wiegand renamed this plant *E. peregrina* in 1917 he had material from eight stations. The writer has recently had a favorable opportunity to make a study of the characters of this same plant from several hundreds of specimens from more than fifty stations, which have accumulated at Philadelphia, having been collected in the surrounding country. He compares in considerable detail the characters of this species with those of its two closest allies, *E. pilosa* and *E. Purshii*, amplifying and reconsidering the characters advanced by above mentioned authors, and weighing their critical comments. The article is concluded by a summary of the distinguishing char-

acters of the three species. From his investigation the author states his belief that, while *E. peregrina* and *E. Purshii* are very definite species units, the material grouped under *E. pilosa* shows such an amount of variation as to give the strong suspicion that this is by no means a homogeneous series.—*James P. Poole.*

428. Marshall, E. S. **Notes on Somerset plants for 1918.** Jour. Botany **57**: 147–154. 1919. [To be continued.]—This is a report of field work done in 1918 by the author and several other contributors. A long list of species and varieties is given, with new localities, and notes on interesting points.—*K. M. Wiegand.*

429. Meyer, Rud. **Echinopsis gigantea R. Mey. spec. nov.** Monatsschr. für Kakteenkunde **29**: 58–59. 1919.—This was found in cultivation at Charlottenburg, the original country being unknown though probably Argentina. The species is compared with *E. valida* Monv.—*A. S. Hitchcock.*

430. Moore, Spencer Le M. **Alabastra diversa. Part XXX.** [Plantae Rogersianae. iv.] Jour. Botany **57**: 160. 1919.—This instalment contains only a description of *Phyllanthus Rogersii* Hutchinson sp. nov., which was omitted from the treatment of *Phyllanthus*, where it should have appeared. It is a native of the Transvaal.—*K. M. Wiegand.*

431. Nakai, Takenoshin. **Notulae ad plantas Japoniae et Koreae XXI.** [**Notes on the plants of Japan and Korea, XXI.**] Bot. Mag. Tôkyô **33**: 193–216. 1919.—This article contains notes and descriptions of new species, varieties and forms in the following genera: *Cephalotaxus, Torreya, Picea. Pinus, Populus, Cercidiphyllum, Pyrus, Viola, Eleagnus, Rhododendron, Sideroxylon, Viburnum, Patrinia* and *Mimulus.* New combinations and names are given for many plants.—*Roxana Stinchfield Ferris.*

432. Nelson, James C. **The new genus Bromelica (Thurb.) Farwell.** Rhodora **21**: 215–216. 1919.—The writer questions whether the characters taken by Farwell in establishing the genus *Bromelica* (Rhodora **21**: 76–78) are correct. He agrees that Farwell's arguments in support of the new genus are convincing as long as the delimitation of the genus *Melica* is based on the characters taken by most American authors as distinctive, but believes that the problem of distinguishing *Melica* might be better solved, not by a separation of the genus, but by an attempt to find a different set of characters on which to base the delimitation. He points out that Hackel, in his key to the *Festuceae* (in Engler and Prantl, Nat. Pflanzenfam. ii. Abt. 2, p. 61–64), takes as the basis of his dichotomy (1) the presence of imperfect flowers on the upper part of the spikelet; (2) the number of such flowers, not their texture or arrangement. Using these as the distinguishing characters, *Bromelica* might still remain as a subgenus of *Melica*, but the nearest ally of *Melica* among American grasses would then be *Diarrhena* and not *Bromus* or *Festuca.* The delimiting characters of the American authors, namely, the texture and the arrangement of the upper lemmas, would then become characters of subgeneric rank.—*James P. Poole.*

433. Ostenfeld, C. H. **Contributions to West Australian botany, Part II.** Dansk Bot. Ark. 2^8: 1–66. *26 fig., 6 pl.* 1918.—The first part, **Stray notes from the Tropical West Australia,** contains general remarks on the vegetation of Northwestern Australia with list of species collected during short visits. New species: *Abutilon flavum* and *Frankenia ambita.* The second part, **A Revision of the West Australian species of Triglochin, Crassula (Tillaea) and Frankenia,** describes three additional new species of *Frankenia*: *F. Maidenii, F. interioris* and *F. compacta.* The third part, **Chenopodiaceae from West Australia,** by Ove Paulsen, lists 30 species, of which *Kochia Ostenfeldii, Arthrocnemum Benthami, A.* (?) *pruinosum* and *A. brachystachyum,* are new.—*A. Gundersen.*

434. Pellegrin, François. **Un curieux Kapokier à fruits en sablier, Bombax buonopozense P. Beauv. var. Vuilletii Pellegrin.** [**A curious silk-cotton tree with fruits in the form of an hour-glass, Bombax buonopozense P. Beauv. var. Vuilletii Pellegrin.**] Bull. Mus. Hist.

Nat. [Paris] 25: 379–380. *1 fig.* 1919.—The author describes and illustrates a new variety of *Bombax buonopozense* P. Beauv. under the varietal name *Vuilletii*. Due to the strangling effect of the coriaceous, deciduous calyx, the fruits assume a form suggestive of an hour-glass. —*E. B. Payson.*

435. Pellegrin, François. **Polymorphisme des feuilles du Lierre commun au Portugal. [The polymorphism of the leaves of the common ivy of Portugal.]** Bull. Soc. Bot. Genève **10:** 380–382. *1 pl.* 1918.—The leaves of the ivy collected in various parts of Portugal present a remarkable polymorphism. In spite of this variation, only one species, *Hedera Helix* L., is present.—*W. H. Emig.*

436. Pennell, Francis W. **Scrophulariaceae of the local flora. V.** Torreya **19:** 235–242. 1919.—This final installment concludes the tribe *Buchnereae* with *Buchnera* (1 species) and adds the last tribe *Rhinantheae*, containing *Schwalbea* (1 species), *Castilleja* (1 species), *Rhinanthus* (1 species), *Pedicularis* (2 species) and *Melampyrum* (1 species, 1 variety). The notes on synonymy and distribution are continued. A list of local specimens of the author's collecting is appended, including 52 named forms. The name of the VIth tribe is corrected to read *Veroniceae*. [Previous installments have appeared in: Torreya **19:** 107–119. *Ibid.* 142–152. *Ibid.* 161–171. *Ibid.* 205–216.]—*J. C. Nelson.*

437. Petch, T. **A new variety of Exacum zeylanicum Roxb.** Ann. Roy. Bot. Gard. Peradeniya **7:** 43, 44. *Pl. 1.* 1919.—*Exacum zeylanicum* Roxb. var. *Lewisii* Petch is described, and the anthers of it and allied forms are figured.—*E. D. Merrill.*

438. Petch, T. **Alocasia indica Schott.** Ann. Roy. Bot. Gard. Peradeniya **7:** 53–55. 1919.—The author shows that the Ceylon form recorded as *Alocasia indica* is really *A. macrorrhiza* Schott.—*E. D. Merrill.*

439. Petrie, D. **Descriptions of new native flowering plants.** Trans. and Proc. New Zealand Inst. **51:** 106–107. 1919.—Describes *Lagenophora cuneata, Urtica aspera, Thelymitra caesia, Brachycome linearis,* new species.—*L. W. Riddle.*

440. Purpus, J. A. **Pachyphytum oviferum J. A. Purpus nov. spec.** Monatsschr. für Kakteenkunde **29:** 100–103. *1 fig.* 1919.—The type was collected at Barranca Bagre near the San Rafaël mines, San Luis Potosí, Mexico, by J. A. Purpus in 1911.—*A. S. Hitchcock.*

441. Quisumbing y Arguelles, E. **Studies of Philippine bananaş.** Philippine Agric. Rev. 12^3: 1–73. *30 pl.* 1919.—Most of the varieties described originated outside of the Philippines, having been introduced within the past few years from tropical Asia, America, Malaya, and Polynesia. About 40 new varieties are described and figured, mostly referred to *Musa sapientum,* but one to *M. errans* and two to *M. paradisiaca.* Drawings of flowers and fruits, totaling 217 individual figures.—*E. D. Merrill.*

442. Rangachariar, K., and C. Tadulingham. **A note on certain species of Polygala.** Jour. Indian Bot. **1:** 44–48. *4 fig.* 1919.—Four species of *Polygala* are considered, all obtained on the estate of the Agricultural College, Coimbatore, India, as follows: *Polygala sp., P. Vahliana* DC., *P. bolbothrix* Dunn. and *P. chinensis* L. Of these *P. chinensis* is the only one included in Hooker's "Flora of British India," and in Gamble's "Madras Flora" only *P. chinensis* and *P. bolbothrix* are listed. The other two species are merged under *P. erioptera* DC. and *P. chinensis* L. Wight and Arnott, however, treated *P. Vahliana* DC. as a distinct species. Characterizations are given of the four species, and notes on the synonymy and relationships. *P. Vahliana* differs from its closest relative, *P. erioptera* DC., in its prostrate habit, oblong hairy leaves, villous sepal-wings, and pinkish petals. The second species will be given a name in a subsequent paper. It is closely related to *P. chinensis* L. and is the *P. arvensis* Willd. var. γ of Wight and Arnott. *P. bolbothrix* is the *P. ciliata* (L.) of Wight and Arnott. The name *P. ciliata* had been used before by Linnaeus for a species of *Salomonia.*—*K. M. Wiegand.*

443. Rydberg, Per Axel. **Rosales, Family 24. Fabaceae, Tribe 6. Psoraleae.** North Amer. Flora 24: 1–64. 1919.—The tribe *Psoraleae*, as given, contains 19 genera, and 16 of these are covered in this part; the remainder will be discussed in a subsequent part. The genus *Eysenhardtia* is treated by Francis W. Pennell.—*H. M. Fitzpatrick.*

444. Schodde, Dorothy E. **Polemoniaceae of Ohio.** Ohio Jour. Sci. 20: 43–47. 1919.—A key to the Polemoniaceae of Ohio is given and the following species are described: *Phlox maculata, P. paniculata, P. ovata, P. glaberrima, P. pilosa, P. divaricata, P. stolonifera, P. subulata, Gilia rubra., Polemonium caerulium, P. reptans, Cobaea scandens.*—*H. D. Hooker, Jr.*

445. Schwantes, G. **Mesembrianthemum Margaretae Schwantes spec. nov.** Monatsschr. für Kakteenkunde 29: 55–57. *1 fig.* 1919.—The species is formally described and notes are added as to its relationship. It belongs to the section *Cymbiformia* and is allied to *M. deserticolum.* The type was collected in German Southwest Africa by Margarethe Friedrich.—*A. S. Hitchcock.*

446. Schwantes, G. **Mesembrianthemum prismaticum Marloth und Mesembrianthemum lapidiforme Marloth.** Monatsschr. für. Kakteenkunde 29: 42–45. *2 fig.* 1919.—This includes remarks and informal descriptions of the two species.—*A. S. Hitchcock.*

447. Sedgwick, L. J. **On Trichodesma indicum R. Br. and Trichodesma amplexicaule Auctt.** Rec. Bot. Surv. India 6: 347–350. *Pl. 11.* 1919.—The two species are contrasted and the differential characters clearly indicated.—*E. D. Merrills.*

448. Sedgwick, L. J. **A new Indian Impatiens.** Rec. Bot. Surv. India 6: 351. 1919.—*Impatiens kleiniformis* is described.—*E. D. Merril.*

449. Sedgwick, L. J. **A new Indian Habenaria.** Rec. Bot. Surv. India 6: 352. 1919.—*Habenaria* (§*Ate*) *multicaudata* is described.—*E. D. Merrill.*

450. Sedgwick, L. J. **On Alysicarpus rugosus DC. and its allied species.** Jour. Indian Bot. 1: 14–18. 1919.—Various authors have treated the species of this genus of the Leguminosae with deeply and closely transversely rugose joints of the loment as one or several species. De Candolle gave two species; Wight and Arnott, three species; while Baker reduced them all to a single variable type. Later floras have mostly followed Baker. The author is convinced that at least four species exist, namely: *A. styricifolius* DC., *A. Heyneanus* Wt. & Arn., *A. rugosus* DC., and *A. ludens* Wall. (probably sp.). This has been learned through field work in western India, where these plants are very abundant. In this region there were two types differing in at least six characters and they did not intergrade. If this was one species the contrasting characters must be allelomorphs. The method of fertilization was not observed, but is probably cross fertilization; two separate types are assumed, each with all the contrasting characters but without a single heterozygote plant even in one class of characters should be impossible. Even if self-fertilized the constancy of characters would convince one that two species were concerned. Much of the difficulty with the taxonomy of *Alysicarpus* lies in the extreme plasticity of the species in their reactions toward environment. Descriptions of the species are given, also list of specimens examined. The material is all from western India collected by Father Blatter, Messrs. Hallberg and Bell, and the author. The treatment is tentative awaiting more complete study, especially of the intricate synonymy.—*K. M. Wiegand.*

451. Small, James. **The origin and development of the Compositae.** New Phytol. 18: 129–176. *Fig. 64–78.* 1919.—[See Bot. Absts. 5, Entry 720; also next following Entry, 452.]

452. Small, James. **The origin and development of the Compositae.** New Phytol. 18: 201–234. *Fig. 79.* 1919.—"The results of the present investigation of the Compositae are chiefly of two kinds; the phylesis of the family and of its chief groups has been elucidated, and various theories have been given to account for the origin and development of the struc-

tures and physiological and cytological phenomena which occur in the family." The general conclusions reached in previous chapters are here summarized in convenient form. The phyletic results are next brought together. The family history is given, tribe by tribe, in complete and positive fashion. The conclusions are based in part on paleontology and geographical distribution, but more largely on comparative anatomy. In the concluding chapter an attempt is made to give, on the basis of an elaborate family tree, a "coherent account of the evolution of the family" based on "modern theories of heredity, evolution and geographical distribution." Step by step, from the Cretaceous to the Pliocene, the origin and differentiation of the tribes and genera in time and space are given in an "attempt to bring a real, living picture of the origin and development of the Compositae before the mind of the ordinary student." [See next preceding Entry, 451.]—*I. F. Lewis.*

453. Smith, Charles Piper. **Studies in the genus Lupinus—IV. The Pusilli.** Bull. Torrey Bot. Club. **46**: 389–410 *Fig. 43–52.* 1919.—The following published names are considered in this paper: *L. pusillus* Pursh, *L. brevicaulis* Wats., *L. Kingii* Wats., *L. Sileri* Wats., *L. Shockleyi* Wats., *L. capitatus* Greene, *L. odoratus* Heller, *L. scaposus* Rydberg, *L. rubens* Rydberg, *L. dispersus* Heller, *L. flavoculatus* Heller, *L. intermontanus* Heller, and *L. argillaceus* Woot. & Standl. The following new combinations are made: *L. Kingii argillaceus* (Woot. & Standl.), *L. rubens flavoculatus* (Heller), *L. pusillus intermontanus* (Heller). *L. odoratus* Heller var. *pilosellus* is described as a new variety.—*P. A. Munz.*

454. Smith, J. J. **Index Orchidacearum quae anno 1919 in Horto Botanico Bogoriensi coluntur. [Index of the orchids grown during the year 1919 in the Buitenzorg Botanical Garden.]** Bull. Jard. Bot. Buitenzorg **III, 1**: 91–126. 1919.—See Bot. Absts. 4, Entry 875.

455. Standley, P. C. **Two new species of plants from Cuba.** Proc. Biol. Soc. Washington [D. C.] **32**: 241–242. 1919.—*Achyranthes crassifolia* Standl., and *Torrubia insularis* Standl. are described as new species from Cuba.—*J. C. Gilman.*

456. St. John, Harold. **Two color forms of Lobelia cardinalis L.** Rhodora **21**: 217–218. 1919.—A brief account of some of the recorded occurrences of the rose-colored form of *Lobelia cardinalis* L. For this form the writer proposes the name *L. cardinalis* L., f. *rosea* n. f. The albino form of the same species is designated as *L. cardinalis* L., f. *alba* (A. Eaton) n. comb., and the synonyms are given.—*James P. Poole.*

457. Thompson, H. S. **Carex montana L.** Jour. Botany **57**: 274–275. 1919.—Notes are given on the discovery and occurrence of this rare sedge on the Mendip plateau in England. The peculiar yellow-green foliage is mentioned as a means of quick identification in the field. It flowers early and the fruits are soon shed. This, together with the fact that many plants do not flower, is the whole cause of its tardy discovery in Mendip, where it was not found until 1890.—*K. M. Wiegand.*

458. Thompson, H. Stuart. **The genus Euphrasia and E. minima.** Jour. Botany **57**: 335–337. 1919.—Attention is called to a paper by John Ball (Jour. Botany **11**: 272. 1873), which seems to have been overlooked by recent writers on *Euphrasia.* Ball, like Townsend formerly, expressed his doubt of there being many species of *Euphrasia* rather than one polymorphic species. Conditions in the British Isles are not opposed to this interpretation, but on the continent the forms are more diverse. Ball noted that one form, *E. minima,* is more distinct than others, and is probably ancient, as it occurs on widely separated mountain tops. The author finds *E. minima* one of seventy plants having the greatest vertical range in the western Alps. He is still skeptical of the occurrence of *E. minima* in Britain. *Euphrasia* is an interesting genus in which to study the course of evolution and distribution, and much can be learned from it. We should not forget the suggestion of Ball that insect visitors play an important part in the polymorphism of the genus. No seeds of *Euphrasia* have been found in glacial beds, though those of the allied *Bartsia* have been so found. The distinguishing features of *Euphrasia* and related genera have been recently ably stated and illustrated by Beauverd (Bull. Soc. Bot. Genève **3**. 1911).—*K. M. Wiegand.*

459. Van den Heede, A. **Une superbe plante annuelle. [A superb annual plant.]** Rev Hortic. [Paris] **91**: 393. 1919.—See Bot. Absts. 5, Entry 1839.

460. Vaupel, F. **Echinocactus Mihanovichii Fr. et G.** Monatsschr. für Kakteenkund **29**: 66. *1 fig.* 1919.

461. Weatherby, C. A. **Further notes on Impatiens biflora.** Rhodora **21**: 98–100. *6 fig* 1919.—The writer published the name *Impatiens biflora* forma *Peasei* (Rhodora **19**: 116. 1917) without having seen the living material, drawing up the description from the reports of the collectors and from statements on herbarium labels. All agreed in describing the flowers as "pink" or "roseate," while the flowers on certain herbarium specimens showed traces of pink coloration. On later examination of the living plants from the type station and two other localities in the White Mountains, he found that the ground color of the flowers of this form is cream, the impression of a pink blossom being due to very numerous pink spots coalescent into solid patches of pink, confined to the inner surface of the spreading perianth parts. This form is then, essentially, only a phase of *f. albiflora* but is allowed to stand, pending further investigation, in view of its undoubtedly striking appearance and its segregation into pure colonies. Its description should, however, be amended to read: "Perianth cream colored, the pink spots numerous and coalescent, on the inner surfaces of the spreading perianth parts, into patches of solid pink. *Impatiens biflora*, forma *platymeris*, f. nov. In the typical *I. biflora* the petals are unequally two lobed on the outer edge, the basal lobe being small, about one half the size of the dilated apical lobe. In the new form the basal lobe is as large as the apical, or even slightly larger, and often slightly overlaps it, giving the flower the appearance of being partially doubled. The difference is illustrated by sketches. The type station is at Southbury, Connecticut, where eight plants were found intermingled with the typical form.—*James P. Poole.*

462. Weingart, W. **Cereus Langlassei Web.** Monatsschr. für Kakteenkunde **29**: 105–106.1 919.—The author gives notes on the species at the Dahlem Bot. Gard.—*A. S. Hitchcock.*

463. Weingart, Wilh. **Cereus ruber Weing.** Monatsschr. für Kakteenkunde **29**: 57–58. 1919.—The author shows this to be the same as *C. Schrankii* Zucc.—*A. S. Hitchcock.*

464. Weingart, W. **Cereus Jusbertii Reb.** Monatsschr. für Kakteenkunde **29**: 72. 1919.—This is thought to be a hybrid between *Echinopsis* and *Cereus.*—*A. S. Hitchcock.*

465. Wernham, H. F. **Rubiaceae Batesianae.—I.** Jour. Botany **57**: 275–283. 1919.—This paper is based on a collection of about 250 specimens made by G. L. Bates in the Yaunde district of Southern Cameroons, and sent to the British National Herbarium. Of them over sixteen per cent were *Rubiaceae.* A lengthy quotation from Bates' notes is included picturing the ecological conditions in certain portions of the region. Nearly all plants are woody and fully half have weak climbing stems. The partial clearings of the natives revert gradually to forest. There is no winter and no regular time of flowering of each species, still Bates thinks some regularity might be made out with study. Twenty-six species and varieties are listed in this installment. References to published accounts, notes on standard characteristics, on distribution, and on habit and classification are given. The following new species are described: *Mussaenda bityensis, Mussaenda leptantha, Sabicca Amomi, Bertiera* (§ *Capitatae*) *bityensis, Randia* (§ *Euclinia*) *megalostigma, Amaralia palustris, A. ekotokicola,* and *Morinda Batesii.* The following new combination is made: *Cephaelis hexamera* (K. Schum) Wernham (*Uragoga hexamera* K. Schum).—*K. M. Wiegand.*

466. Wernham, H. F. **Rubiaceae Batesianae—II.** Jour. Botany **57**: 342–347. 1919. [Continued from Jour. Botany **57**: 275–283.]—The paper contains the descriptions of eight new species and notes on *Tarenna eketensis* Wernh. The new species are as follows: *Gardenia nigrificans, Oxyanthus heptactina, Atractogyne Batesii, Pavetta antennifera, Rutidea Batesii, R. pavelloides, R. tarennoides,* and *R. Dorothea.*—*K. M. Wiegand.*

467. Woodward, R. W. **Further notes on Philotria.** Rhodora **21**: 218–219. 1919.—See Bot. Absts. 5, Entry 590.

MISCELLANEOUS, UNCLASSIFIED PUBLICATIONS

B. E. Livingston, *Editor*

468. A., B. C. [Rev. of: Winterbottom, D. C. **Potash—an investigation into its economic sources in South Australia, etc.** Dept. Chem. South Australia Bull. 2. *34 p.* 1916.] New Zealand Jour. Sci. and Tech. **1**: 124–126. March, 1918.—Under "*Potash from plants,*" author gives analysis of a number of substances examined in laboratory of his department, from which it appears that the woods of various species of *Eucalyptus* yield an ash which may contain from 1.25 to 5.20 per cent of potash He concludes from his analysis of various garden plants, bracken fern, etc., that the plant life of Australia has generally a lower potash content than that of European countries. The following Australian seaweeds were examined and found to have percentage of potash contents as indicated:—*Posidonia australis*, 0.6; *Macrocystis* (Keep), 6.0; *Echlonia radiata*, 10.0; *Seriococeus axillaris*, 10.2.—The last two samples contained an appreciable quantity of iodine. *Macrocystis pyrifera* is abundant along rocky coasts of New Zealand. *Ecklonia radiata* is common along shores of North and South islands of New Zealand. Reports also on derivation of potash from wool, and the recovery and purification of wool-fat from the wool-scouring process.—*S. S. Gager.*

469. B., L. [Rev. of: Smart, B. J., and P. Pecover. **Investigations regarding heat-insulating materials.** Commonwealth Engineer **5**: 127–132. Dec., 1917.] New Zealand Jour. Sci. and Tech. **1**: 186–187. May, 1918. Gives quantitative data concerning marine fiber (*Posidonia australis*) and other plant and mineral products and substances. [See also Bot. Absts. 6, Entry 472.]—*C. S. Gager.*

470. Hickey, J. P. **The diagnosis of the more common helminthic diseases of man.** Public Health Reports [U. S. A.] **35**: 1383–1400. 1920.—Refers to the necessity of distinguishing spores of cryptogams from eggs of helminths in the examination of stools and gives some specific details.—*C. E. Fairman.*

471. Holste, G. [Rev. of: Bücher, H. **Die Heuschreckenplage und ihre Bekämpfung. (Combating the locust plague.)** Zeitschr. angew. Entomol. (Supplem. 3). 1918.] Forstwiss. Centralbl. **41**: 336–338. 1919.—Plagues of the native locust (*Stauronotus maroccanus*) in western Anatolia, and of the African locust (*Schizocerca peregrina*) in Palestine and Syria seriously threatened the crops of those regions during the war. German scientists were called in to assist in checking the damage, and finally succeeded by trapping the locusts in ditches dug along a wall of zinc plates 30 cm. high.—*W. N. Sparhawk.*

472. J., S. H. [Rev. of: Winterbottom, D. C. **Marine fibre.** Dept. Chem. South Australia Bull. 4. *36 p.* 1917.] New Zealand Jour. Sci. and Tech. **1**: 127. March, 1918.—Author records beds of *Posidonia australis* (a marine spermatophyte) averaging about 10 ft. deep. There are in sight nearly 5,000,000 tons that can be sold profitably at £25 per ton. Reviewer states that he has used *Posidonia* very successfully as a heat-insulating material in refrigeration, with better results than with slag wool, pumice, hairfelt, boiled paper, and various sawdusts. The material is recommended also for boiler and pipe covering. [See also Bot. Absts. 6, Entry 469.]—*C. S. Gager.*

473. Sanderson, T. **The bread value of wheat.** North Dakota Agric. Exp. Sta. Bull. 137. *45 p.* 1920.—The author presents certain baking coefficients devised by him to be applied to the value of the milled flour. These are concerned with water absorption of flour and volume, color and texture of loaf. The value of the flour being fixed by these various factors, the market value of the wheat becomes fixed in turn. Using the standards given, the author finds that the wheat values thus secured are not correlated at all with the commercial values which the trade assigns to the federal grades. In fact, the author states that some of the lowest commercial grades of wheat really had as high milling and baking values as the higher grades of wheat, in certain seasons. The author states that if the proposed coefficients are fair, it follows that the money loss to the farmers through the present system of wheat marketing is very great.—*L. R. Waldron.*